BAYLOR research '14

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WELCOME *to the* LATEST ISSUE *of* RESEARCH.

Much has been written in previous issues concerning Baylor's growing research infrastructure, and to be sure there is much to celebrate. However, new faculty arriving at Baylor find more than just buildings and equipment. They inherit the resource that has defined Baylor for generations: its students.

In this issue of *Research*, we highlight the creative endeavors being pursued by a small sample of Baylor faculty — a cross-section of chemists, nurses, engineers, scientists, musicians, artists and philosophers — and explore the relationships at their core — the relationships that make Baylor so special.

DR. TRUELL W. HYDE

The stories you will read within these pages are representative — what Baylor students call "typical Baylor" — and the fact that they are typical is central to the Baylor experience. You will find researchers at Baylor's Institute for Biomedical Studies in Waco joining with researchers at the Baylor College of Medicine in Houston, Baylor Scott & White Health in Dallas and Temple, and the Baylor Research Institute in Dallas to develop interdisciplinary projects across the fields of medicine and health. One such project is providing Baylor students in the School of Engineering & Computer Science the opportunity to collaborate with an orthopedic surgeon at Baylor Scott & White Health. Together, they are developing imaging software designed to detect serious injuries to the region where the spine joins the skull. At the same time, faculty members from the Louise Herrington School of Nursing are building on the work of physician researchers by conducting patient-centered research on best practices in health care delivery in the US, Africa and India.

Such faculty-student relationships characterize the Baylor experience across both the undergraduate level and within graduate programs of study even at the highest levels of research. This year, for example, Baylor's department of chemistry welcomed Dr. John L. Wood, an organic chemist whose work synthesizes small molecules from natural sources to support the work of the pharmaceutical industry in drug discovery and development. Wood's lab, located in the Baylor Sciences Building, complements the already outstanding research program housed within the department of chemistry. At least as important, the students and faculty working within Wood's lab are forging relationships that will shape the lives of young scientists in world-changing ways.

Across campus at the BRIC, we find the story of the mentoring relationship forged between a professor and student at the Colorado School of Mines and how it now is impacting advanced composites research within the School of Engineering & Computer Science. Another project finds undergraduates funded by Nova Biologicals, Inc. redesigning and building a product aimed at protecting one of our most precious natural resources — water — from nuclear, biological and chemical threats. Exhibiting the integrated paradigm that makes the BRIC so unique, the Nova team is also working with LAUNCH, the innovative technology accelerator within the BRIC that operates in cooperation with the Hankamer School of Business, to develop a business plan for global commercialization of the resulting product.

The list (as you'll read) goes on. You will meet a Baylor art professor whose study of the surfaces around us moves his art into challenging new territories, and meet the dean of the Baylor Honors College who challenges students to develop critical thinking and writing skills through the study of classical literature and popular culture. You'll read about the Green Scholars Initiative in Baylor's Institute for the Studies of Religion, offering both professors and students alike the unparalleled opportunity for direct contact with primary texts. Finally, you will be introduced to professors within the School of Music who on a regular basis prepare students for the international stage.

As always, it's my hope the stories in this issue of *Research* will provide you a glimpse into the array of scholarship marking the Baylor experience. More importantly, I trust you'll also see a glimmer of the heart of that story — professors opening the door to their research and inviting undergraduate and graduate students to join them on the journey.

Baylor research making a difference — as always, the best is yet to come!

To learn more, please visit our websites at www.baylor.edu/research and www.baylor.edu/bric.

LOOKING BELOW THE SURFACE

TWO BAYLOR FACULTY MEMBERS ENHANCE *our* UNDERSTANDING *of the* WORLD AROUND US *by starting at the* SURFACE *and* LOOKING DEEPER.

At Baylor, the pursuit of knowledge takes many forms and moves in many directions. Faculty across the university use cutting-edge techniques to broaden the current state of knowledge and advance scholarly conversations in a variety of fields. While they ask different questions and seek different conclusions, they share an emphasis on producing work that expands the academic landscape while equipping their students to take the next steps in their careers.

With that broad range of faculty expertise, perhaps it's not surprising that faculty members who work in seemingly unrelated fields can have research and creative agendas that begin in a similar place but use very different techniques.

Dr. Rebecca Sheesley, an assistant professor of environmental science in the College of Arts & Sciences, joined the Baylor faculty in 2010 after completing a postdoctoral fellowship at the Bert Bolin Centre for Climate Research in Stockholm, Sweden. Since arriving at Baylor, she has continued to develop an interdisciplinary research agenda focused on the origin and transport of air pollution.

"The collaboration gives us a lot of different resources to draw from."

Her specific focus is on particulate matter (PM), a complex mixture of tiny particles suspended in the atmosphere. Sheesley analyzes particles smaller than 2.5 micrometers in diameter, roughly one-thirtieth the size of a grain of sand. They can be emitted directly from sources as particles or formed in the atmosphere when gases react in the presence of sunlight. In addition to causing environmental damage, PM also has negative effects on human health. According to the Environmental Protection Agency, exposure to particle pollution can cause serious

DR. REBECCA SHEESLEY

health problems including asthma, decreased lung function and heart attack.

While federal and state regulations on air quality give government and industry leaders an incentive to closely monitor particulate matter in the air, Sheesley says that just knowing how much PM is in the air is only half the story.

"Particulate matter can originate from anthropogenic—man-made—sources like auto exhaust and industrial emissions, but it can also be produced from biogenic—natural—sources as a product of gases given off by trees and other plants," she says. "My research involves sampling the air at fixed locations and determining what percentage of suspended particles come from various sources."

Since some sources of particulate matter are easier to regulate than others, Sheesley says, it's essential to know how much of the pollution in a problem area is due to controllable human activity and how much is a result of natural processes. With so many potential sources of PM and the high likelihood of particles spreading over large areas, a collaborative approach is essential to fully understanding the pollution that exists in a particular region.

In a current research project funded by the Texas Commission on Environmental Quality, Sheesley is working with colleagues at the University of Texas and Rice University to study particulate matter conditions in Houston and the surrounding area. She says the combined expertise of faculty from all three universities helps provide a more nuanced understanding of pollution's causes and potential solutions.

"The collaboration gives us a lot of different resources to draw from," Sheesley says. "Baylor's ground-based sampling equipment measures particulate matter levels at several sites throughout the Houston area which can then be analyzed for the percentage of anthropogenic versus biogenic particles using radiocarbon analysis and molecular tracers. Then, our collaborators at the University of Texas and Rice University use single-particle instruments to get detailed information on the temporal trends and chemical characterization of the particles. They also provide mobile sampling capabilities that give more detailed information on the particulate matter levels in between the fixed sites where our sampling equipment is located."

> "The measurements we make help us to create a model that shows the effects created by various sources of emissions."

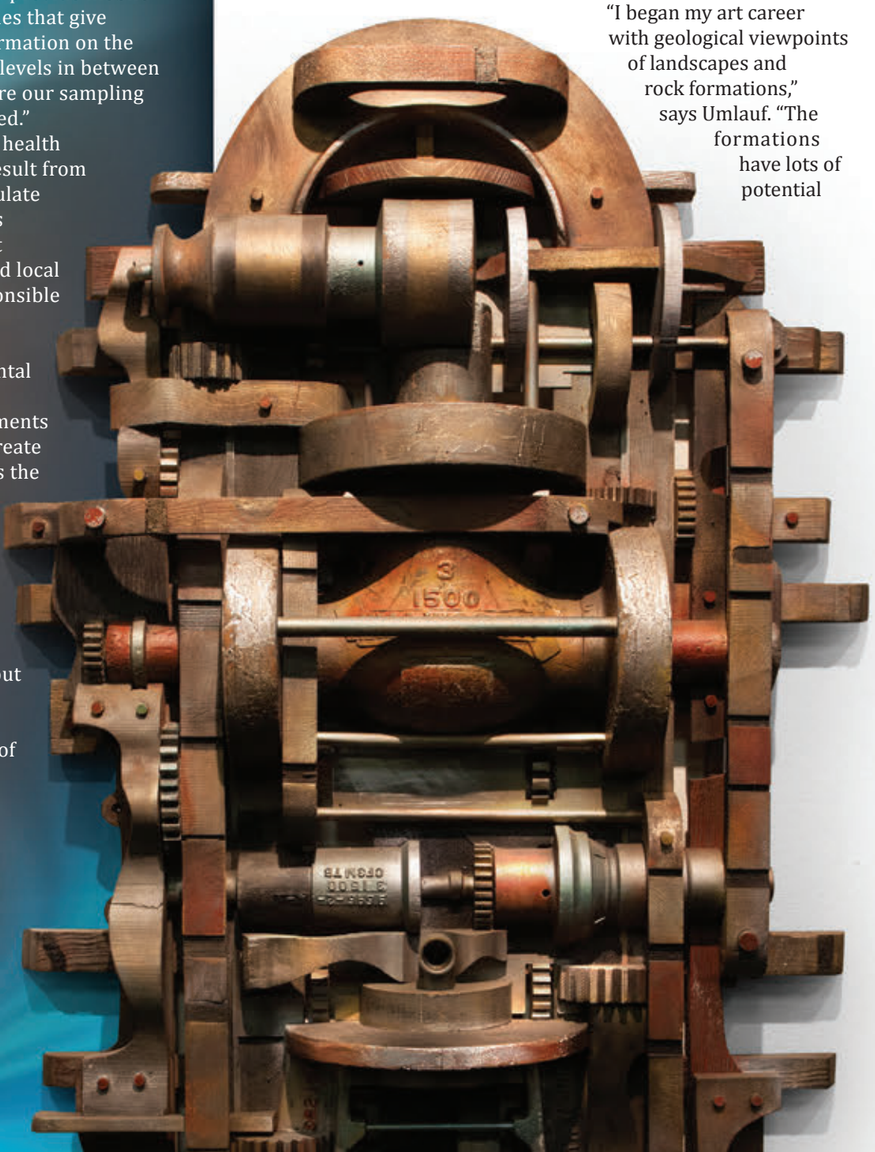
Because of the health impacts that can result from exposure to particulate matter, Sheesley's research is of great interest to state and local governments responsible for maintaining compliance with federal environmental guidelines.

"The measurements we make help us create a model that shows the effects created by various sources of emissions. That knowledge helps governments and industries make good decisions about what factors they can best control to reduce the impact of particulate matter on air quality."

While a brisk wind whipping across a jagged, roughly formed geologic formation might inspire Sheesley to consider the rocks' effect on the movement of suspended particles, that same scene inspires a different kind of intellectual response from Karl Umlauf, Baylor's artist in residence and professor of art in the university's College of Arts and Sciences.

Umlauf, an internationally known artist who has exhibited works of drawing, painting and sculpture around the world, has drawn inspiration from a variety of natural and industrial sources, including the distinctive geologic features he observed while growing up near the Balcones Fault Zone in the hill country of Central Texas. As a young child, he and his friends explored the caverns near his home, cultivating a passion for geology that has informed his career in art ever since.

"I began my art career with geological viewpoints of landscapes and rock formations," says Umlauf. "The formations have lots of potential



for abstraction, but they still maintain their own identity. I've always adjusted the formations to bring out certain aspects while allowing the landscapes to maintain their essential nature."

Throughout his career, Umlauf has worked in a wide range of media allowing him to represent different attributes of the natural and industrial world from which he draws inspiration. Whether working in charcoal, metal, or even extruded fiberglass, Umlauf's focus is on experimentation. He says having the freedom to experiment with new ideas and nontraditional media makes him both a better artist and a more effective teacher.

"As a working research artist, I can help my students learn to take risks and pursue ideas based on what historical and contemporary masters have given us. Ideally, a teacher should be an informational guidepost for his or her students and teach them to explore new ideas rather than just concentrate on producing art that will be commercially successful. I think my own experimentation makes me better prepared to help my students find new solutions to old problems."

Umlauf says that working at Baylor has provided him the opportunity to remain active in the research that supports his art as well as his teaching.

"From the very beginning, the administration has been extremely supportive of my work, even when it was outside the more traditional work that you might expect to see at a place like Baylor. I've been able to explore the full spectrum of research, media, ideas and creative processes."

"I began my art career with geological viewpoints of landscapes and rock formations. The formations have lots of potential for abstraction, but they still maintain their own identity."

PROFESSOR KARL UMLAUF

www.karlumlauf.com

A CERTAIN '14 Ch BAYLOR RESEARCH EMISTRY:

A PAIR *of* ACCOMPLISHED CHEMISTS THRIVE *in* BAYLOR'S VIGOROUS CULTURE *of* DISCOVERY *and* INNOVATION

In 2009, Dr. Patrick Farmer assumed the chair of Baylor's department of chemistry & biochemistry, taking the reins of a well-established department with decades of cancer, biomedical and other productive research to its credit. It was a good match for Farmer, who came to Baylor from a professorship at the University of California, Irvine, where he settled after a productive postdoctoral stint at the California Institute of Technology and a NATO fellowship at the Ecole Normale Supérieure in Paris, continental Europe's pre-eminent teaching and research institution.

In work funded by the National Science Foundation, Farmer's research group at Baylor studies the biochemical and pharmacological effects of nitroxyl (HNO) donors, a class of compounds that show potential for clinical use against heart disease and cancer. In American Cancer Society-funded work, his group developed new metal-based drug therapies for melanoma, the most deadly of cancers of the skin. And in a separate project funded by the American Chemical Society, the group is synthesizing new photoactive materials that may significantly increase the efficiency of solar energy systems.

One of Farmer's earliest challenges as department chairman involved recruiting a top researcher to fill the university's Robert A. Welch Chair in Chemistry, held at the time by renowned British chemist, Dr. F. Gordon A. Stone, who was retiring after 20 years in the position. The author of more than 900 academic publications and recognized by the American Chemical Society as one of the world's top chemists, Stone's successor would have very large shoes to fill.

Farmer's search quickly led him to Dr. John L. Wood, former Yale professor, holder of the A.I. Meyers Chair in Chemistry at Colorado State University and organic chemist of international regard. Graduating Summa Cum Laude with a B.A. in chemistry from the University of Colorado Boulder, Wood earned his doctorate in organic chemistry from the University of Pennsylvania in 1991 and subsequently completed an American Cancer Society postdoctoral fellowship at Harvard.

Wood was no stranger to Farmer or Baylor; he had spoken previously at one of the department's colloquium events. He was more than a little surprised at what he found on that first trip to the campus.

"Prior to my first visit I didn't know anything about Baylor; I didn't even look it up on the Web before I came down to give the seminar," Wood recalls. "I thought it was just going to be a small, undergraduate place. When I got here and I saw this facility (Baylor Sciences Building) I just thought, 'Oh my, this is a much more impressive place than I imagined.' Not long after I got back to Colorado, Dr. Farmer asked me if I would be interested in the Welch Chair. I said, 'Sure, let's find out more about it.'"

But Wood was pretty happy where he was. "I grew up in Colorado, and Texas would be the last place in the world I ever thought I'd move to," he laughs.

While Wood was mulling Farmer's offer, one of Wood's former students suggested that Farmer might be able to entice Wood to come to Baylor if he would write a proposal to the Cancer Prevention and Research Institute of Texas (CPRIT) naming Wood as the proposed principal investigator.

THE ROBERT A. WELCH FOUNDATION (HOUSTON, TX)

Is one of the oldest and largest private funding sources for chemistry research in the United States.

Provides funding to advance chemistry research in Texas institutions through grants, endowed chairs, visiting lectureships, and other special projects.

Baylor's Welch Chair, established in 1965 and one of the first, is now among more than three dozen chairs around the state endowed by the foundation.

www.welch1.org

DR. PATRICK FARMER + DR. JOHN WOOD

DR. WOOD' S SELECTED HONORS AND AWARDS

Katritzky Award in Heterocyclic Chemisty 2009

Amgen Faculty Award 2005 – 2009

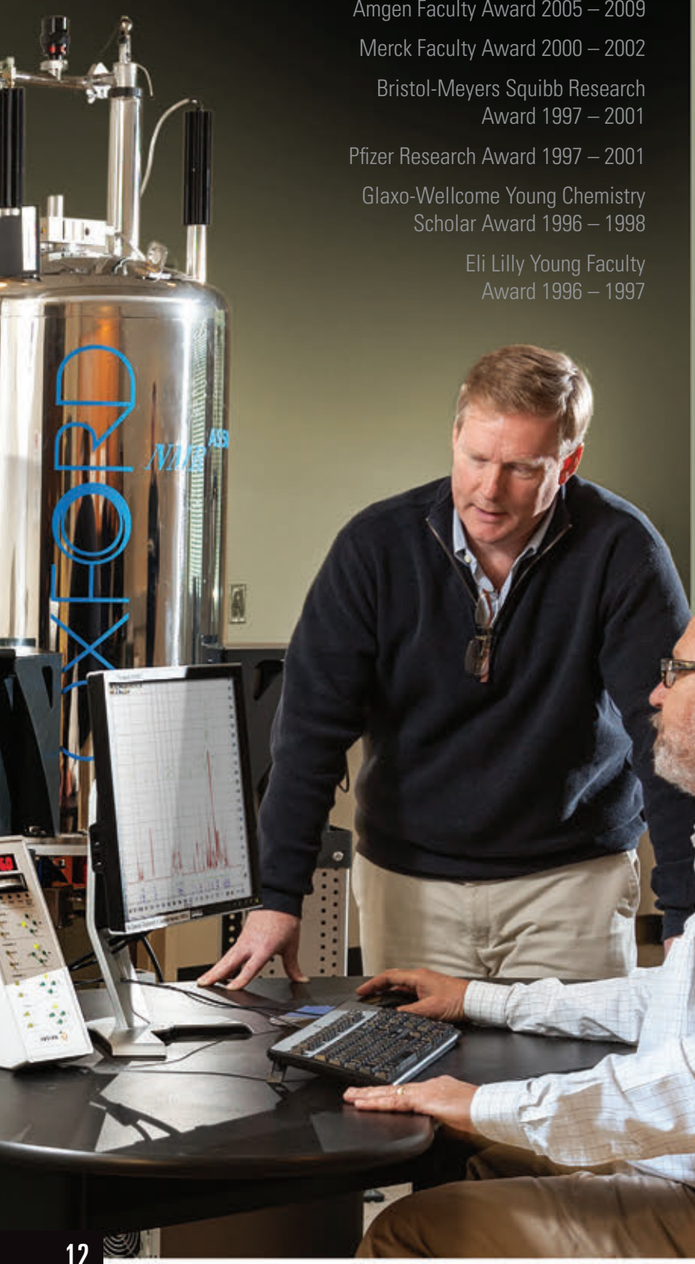
Merck Faculty Award 2000 – 2002

Bristol-Meyers Squibb Research Award 1997 – 2001

Pfizer Research Award 1997 – 2001

Glaxo-Wellcome Young Chemistry Scholar Award 1996 – 1998

Eli Lilly Young Faculty Award 1996 – 1997



Knowing that the CPRIT program does about as much to help Texas institutions recruit top-notch, out-of-state researchers as Robert Griffin III's Heisman Trophy did for Baylor's football recruiting program, Farmer decided to give it a go. When CPRIT responded with a $4.2 million award, Wood pulled up stakes and headed for Waco.

Wood's Baylor laboratory specializes in synthesizing small-molecule compounds derived from natural sources such as plants, animals or fungi. The compounds come to him from the scientists who isolate them, or from researchers who think a previously discovered natural compound merits further study, but can't get enough to work with from the natural sources. His work has earned him favor with the biggest names in the pharmaceutical industry, where many of his former students go on to find productive and rewarding careers.

As big an incentive as the CPRIT grant was, it was only one consideration in Wood's decision.

"I think the thing that really turned the tide for me was, this university's administration was committed — seriously committed and putting their money where their mouth was — to improving Baylor's stature in both research and collegiate athletics. Oftentimes these things are at odds with one another. You can see people put loads of money into their athletic program while academics take a backseat. But here they had built tremendous facilities for both and it seemed to me, 'Here is a place that has their priorities correct.'"

As with many in their profession, Wood and Farmer cite the culture of teaching and learning as a sustaining source of motivation and inspiration. Collaborating with other colleagues around the nation and working with students — both graduate and undergraduate — is one way scientific research influences the world around us in a positive way.

"That's how science is done. You need other people to inspire you and to tell you when you're doing it right and when you're doing it wrong. As scientists in a particular area, we all work together," Farmer observes. "Basic science is unusual in that way. People in directed or applied research are competing with each other and have to be very circumspect about letting others know about what they are doing. Basic researchers share things openly; they have to." Farmer continues, "Science is science, and what comes out of it is usually not what you expect. Chemistry, in particular, is a kind of trade in which you can read all you want about how reactions of sulfur and oxygen happen, but until you are there, you see it, you start it and you smell it afterward, you don't really understand it."

It's that perspective that undergirds his belief that research experience is crucial for all students, but particularly undergraduates.

"Undergraduate research opportunities are particularly important for students who are going to medical school or into any other health profession, as well as for those wanting to be scientists. But it is equally important for the student who simply wants to know how the world works

"That's how science is done. You need other people to inspire you and to tell you when you're doing it right and when you're doing it wrong."

— how cooking works, how your car works, even the fertilizer you use in the backyard. People should have some kind of chemical understanding of what they are doing before they do it."

That philosophy resonates with Wood, who regards himself as a teacher first, and considers research as simply the best way to turn capable and curious students into world-class scientists.

"My whole career started with undergraduate research. I just started doing it not really knowing what I was getting into. I didn't really understand what was going on in the flask or what it was we were doing. But I enjoyed the manual labor of it, setting things up and working in the laboratory. It just evolved from that point."

That experience became a template for Wood's role as researcher-mentor, and he finds Baylor a good fit with that philosophy.

"The best part of my job is interacting with my students. Hopefully my colleagues will forgive me, but I enjoy talking with my students generally more than I enjoy talking to anybody else. And I think everyone else here is like that."

BAYLOR SCIENCES BUILDING (BSB)

Built at a cost of over $100 million & dedicated in 2004, the BSB was one of the largest building projects in the university's 169-year history.

The 508,000 square-foot facility consolidates the scientific disciplines of biology, chemistry, environmental science, geology, physics and psychology and neuroscience, and houses 31 classrooms and lecture halls and over 200 teaching and research laboratories.

Shared facilities include the Molecular Biosciences Center and the Mass Spectrometry Center.

RESEARCH *in the* HUMANITIES: *Approaching* CULTURE CRITICALLY

For Dr. Thomas Hibbs, distinguished professor of ethics and culture and dean of Baylor's Honors College, former chair of philosophy at Boston College and alumnus of the University of Dallas and Notre Dame, promoting a culture of discovery means, well, discovering more about culture, and then writing about it.

"Because we are the only exclusively undergraduate school or college on campus, what we're aiming for is as high a level of undergraduate research and writing as we can possibly attain," Hibbs explains. "We want our students to be doing serious research in the humanities, the sciences, the social sciences, but we also want them to develop habits of good writing. We foster that through intensive collaboration and mentoring by faculty who are themselves actively engaged in research and writing."

While that may not be a particularly unique approach, successfully executing it requires intelligence, commitment and discipline on the part of faculty and students alike. And Baylor Honors College students have at times achieved success that is a bit startling.

In 2009, Baylor professor of classics Alden Smith assigned each student in his honors Latin class on Virgil to write an abstract and submit it for presentation at the Classical Association of the Middle West and South conference in Minneapolis. Hibbs recalls what happened.

"The conference director called with the news that, using a blind review process in which papers' authors were not revealed to reviewers ahead of time, seven of his undergraduate students had their papers accepted. The reviewers were shocked to find that while they were turning down some established faculty members from other universities, seven of our undergraduates got their papers accepted."

Under Hibbs' leadership, promoting a culture of discovery in the Honors College isn't solely an exercise in scholarship. As in other fields, the potential for humanities research to have a positive impact on society is always a very real consideration.

"My own view is that I certainly want very good scholars and I want good teachers, but it's even better if we can also find good faculty who can speak to the questions of the wider culture," he says. "And we need scholars of that sort, of the highest caliber, especially in Christian universities and colleges, and in secondary schools. Many of the students who will study with faculty like this will play a teaching role somewhere, and the better our institutions are academically, the better the reputation, the more of an impact they have indirectly on the culture."

Scholars with that potential and demonstrated ability are aggregating to Baylor. Recently, the Honors College reeled in Alan Jacobs, former Clyde S. Kilby Chair and Professor of English at Wheaton. Jacobs is a prolific author whose biography of C. S. Lewis is widely lauded, as are his more recent works, *Original Sin: A Cultural History,* and *The Book of Common Prayer: A Biography.* He joins an Honors College faculty fairly brimming with distinguished scholars and researchers.

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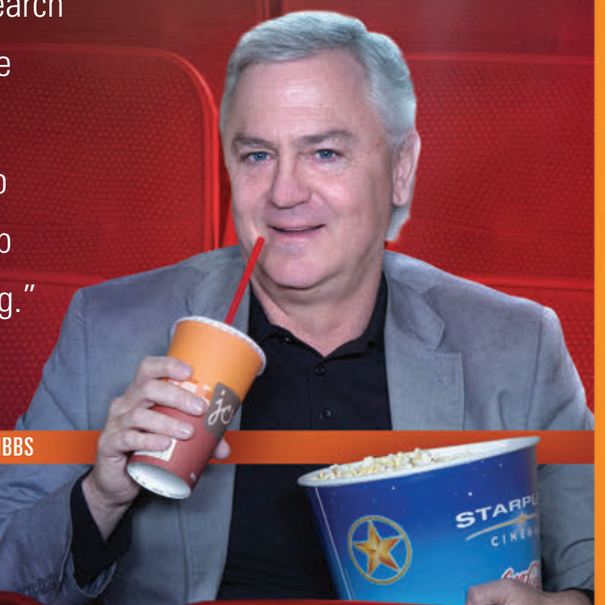


DR. THOMAS HIBBS

Hibbs' own intellectual comfort zone spans the ages, with his name on authoritative scholarly works ranging in topics from St. Thomas Aquinas (*Aquinas, Ethics and the Philosophy of Religion: Metaphysics and Practice*) to W.E.B. Dubois (*W.E.B. DuBois and Socratic Questioning*).

But it is his insightful commentaries on movies, theatrical productions, music and other elements of pop culture in The National Review, Christianity Today, Books and Culture, The Dallas Morning News, The Weekly and other mainstream media outlets that have earned him a kind of "street cred" that reaches far beyond academia.

"I started writing about film, theater, and the arts when I was a faculty member at Boston College. I saw that students were making very little connection between the books they were reading in class and the world they were immersed in outside the classroom — a world of sound and image," he explains.

"I started working to get them to see the kinds of narratives that they find in music, in film and in television have ethical and philosophical implications and presuppositions. I wanted to get them thinking about these things."

BAYLOR HONORS COLLEGE

GREAT TEXTS
Established in 2002, Baylor's Great Text program helps students acquire the skill of reasoning about complex texts that are initially unfamiliar, while learning to apply their principles to new situations and formulating their own answers to the basic human questions: Who am I? Where did I come from? Where am I going? What can I know? How should I live?

BAYLOR INTERDISCIPLINARY CORE (BIC)
The BIC curriculum explores the interrelation of humanities, social sciences, and the physical sciences to provide students with a broad context in which they can better understand the contemporary world.

HONORS PROGRAM
Since 1959, Baylor's Honors program has enriched the academic experience of highly motivated students by supplementing traditional degree requirements and majors in all departments and schools of the university with smaller, distinctive classes, interdisciplinary approaches, and opportunities to pursue research with faculty mentors. Baylor's Honors Program is affiliated with the National Collegiate Honors Council (NCHC).

UNIVERSITY SCHOLARS
The most selective undergraduate academic program at Baylor, University Scholars accepts less than two percent of the university's entering students, who pursue an individualized course of study with the advice of a program director. University Scholars must take a three-course sequence in Great Texts, create an independent reading list, and submit a senior thesis.

RESEARCH *in the* **LOUISE HERRINGTON SCHOOL OF NURSING** *upholds the* UNIVERSITY'S RICH SPIRITUAL TRADITION *by developing better ways to care for the afflicted*

DEAN CONROY'S PROFILE

AACN-Wharton fellow

VCU BSN and MS, EdD from UCFL

Dean of AASU College of Health Professions

Dean of Dumke College of Health Professions, Weber State

Dean for professional and technical studies at John Tyler CC

14 yrs faculty at UCF and VCC

Reviewer, Journal of Allied Health Sciences

Utah Gov Task Force on Child Abuse

Chair, Virginia Committee of Joint Boards of Nursing and Medicine

National Council of State Boards of Nursing

DR. SHELLEY CONROY

Bring up the subject of health sciences research, and the mind fills with images of scientists in lab coats amid cluttered assemblages of glassware and instrumentation, or of lab technicians wielding pipettes over Petri dishes full of brightly colored gels. While that's not at all inaccurate, it by no means represents the full picture, as Dr. Shelley Conroy would be quick to point out.

Just completing her second year as dean of Baylor's 104-year-old Louise Herrington School of Nursing (LHSON) in Dallas, Conroy's career has earned her an enviable array of credentials as a registered nurse, health care educator, administrator and governmental policy adviser. But she is a seasoned researcher as well, with studies about workplace stressors, rural health outreach, health care policy, health professions education and supply, and global nursing education among the $7 million in sponsored projects to her credit.

It's not unexpected, then, that she views research as essential both to ensuring that patients get the best possible health care, and to training the professionals who deliver it.

"Nurses are the heart of health care delivery," Conroy says. "We help our patients achieve their maximum health potential and are best equipped to see the patient as a whole, to know the patient's environment and life circumstances.

"Research informs our practice as well as our teaching," she continues. "It's been estimated that the amount of new knowledge in the nursing field doubles every one to two years. We teach our students that their practice needs to be evidence-based. To do this they must be involved in research or applying knowledge generated from research."

Conroy believes multidisciplinary research in many different medical and health fields is vital to improving patients' health and health care.

> "Research informs our practice as well as our teaching. It's been estimated that the amount of new knowledge in the nursing field doubles every one to two years."

And while nursing research generates its own unique body of scientific knowledge, that knowledge complements and enhances other medical research.

"One example of that might be when biomedical researchers determine an ideal range of lipid or blood sugar levels," she explains. "Nursing research may be able to develop methods of achieving those ideal levels in the way patients find most usable, practical or realistic."

Toward improving health care and its delivery, LHSON faculty and student researchers are at work on projects that target both the community and the globe.

On a regional scale, Dr. Barbara Camune is working with environmental sciences researchers on a project aimed at monitoring and detecting lead toxicity in children in and around Waco. Similarly, Dr. Claudia Beal is researching ways to better educate Texas women on recognizing stroke symptoms that are distinctly different from those men typically experience.

Globally, Lori Spies is working to improve conditions in Africa, where 80 percent of all health care is provided by nurses, and Drs. Mary Ann Faucher and Cheryl Riley are doing translational research in India, where an innovative umbilical-clamping technique may improve the life-long health of the 70-80 percent of infants there who suffer iron deficiency anemia.

Other LHSON researchers are involved in a long list of projects that range from gauging the effects of out-migration of nurses from developing countries, to evaluating the efficacy of simulation-based learning, and determining how best to promote breast-feeding among African-American mothers.

On a deeper level, Conroy recognizes research as crucial to strengthening the practice of nursing, a profession she sees as being as well matched as any to the university's Christian mission and 169-year-old tradition of service and leadership.

"We emphasize with our students that God has called us to this way of serving others, of helping the poor, the helpless, the vulnerable at a time when they are most in need of someone to walk alongside them."

HANDS-ON LEARNING

DR. MELINDA NIELSEN + RACHEL SMITH

BAYLOR'S INVOLVEMENT *with the* GREEN SCHOLARS INITIATIVE *puts some of the* WORLD'S MOST ANCIENT TEXTS *in the hands of* UNDERGRADUATE STUDENTS.

For some undergraduate students, education is a passive activity. They might learn about advanced analytical techniques in class and perform rudimentary analysis in labs, but rarely do they have the chance to do hands-on work that makes a real contribution to scholarship in their fields.

Thanks to a partnership between Baylor's Institute for Studies of Religion and the Green Scholars Initiative (GSI), Baylor's undergraduate students have the chance to undertake serious analysis on ancient manuscripts and text related to the Judeo-Christian story.

GSI, established by the Green family, is a multidisciplinary initiative aimed at acquiring, cataloging and preserving artifacts like cuneiform texts and papyri, Torah scrolls, Coptic biblical texts and medieval scripture and commentary manuscripts.

Scholars at over 60 universities around the world conduct research through GSI. In addition to Baylor, other partners include Oxford, Cambridge and the University of London, as well as leading institutions in North America, Europe and the Mideast.

As the major research partner in GSI, Baylor is able to offer unprecedented research opportunities to its faculty and students in fields like classics, history and theology.

Dr. David Jeffrey, distinguished professor of literature and humanities in Baylor's Honors College, says the partnership between Baylor and GSI is a natural fit that opens the door for faculty and students to include these texts and other artifacts in their undergraduate education.

"Baylor has one of the world's deepest collections of faculty expertise related to these texts," says Jeffrey, who is also ISR's director of manuscript research in scripture and tradition. "Because of the Green family's resources and our high-quality faculty, our students are able to learn advanced techniques and do work that would be reserved for faculty or advanced graduate students at other institutions."

Rachel Smith, a senior in Baylor's University Scholars program, began working on GSI projects during her sophomore year when she assisted faculty and graduate students with analysis of early papyrus fragments from the New Testament book of Romans. By comparing the style of writing to other, known manuscripts, she was able to estimate the age of the text and draw conclusions about the size and origin of the larger manuscript from which the fragments were taken.

Currently, Smith is part of a team of faculty and students transcribing and translating the Speculum Humanae Salvationis, a 14th-century manuscript containing 45 chapters, each one a moral lesson based on a different passage from scripture. Smith, who plans to pursue a graduate degree in classics, says the experience of studying the Speculum has helped her extend her education beyond the classroom.

"It's been a huge privilege to work on these projects with the Greens' support. I've learned an incredible amount about papyrology, which will make me much more competitive when I apply to graduate schools."

Dr. Melinda Nielsen, an assistant professor of great texts in the Honors College, agrees that Baylor's partnership with GSI provides invaluable benefits to undergraduate students who are involved in the projects.

"Many of these manuscripts have never been studied as closely as our students are studying them," says Nielsen. "It gives our students the chance to apply their skills to something real and it lets them contribute to a tradition of study that goes back thousands of years."

BUILDING A PIPELINE

MENTORSHIP ENCOURAGES CLOSE, PRODUCTIVE RELATIONSHIPS *that* ENCOURAGE *the* NEXT GENERATION *of* ACADEMIC *and* PROFESSIONAL LEADERS.

DR. DOUG SMITH + DR. DAVID JACK + SARAH STAIR

Baylor's culture of mentorship is predicated on the idea that frequent, meaningful contact between mentors and mentees helps junior faculty and students learn what it means to be productive and successful in their personal, as well as professional lives. In the department of mechanical engineering, two faculty members and one graduate student represent three professional generations, a microcosm of the pipeline at Baylor that helps develop bright, motivated students into the next generation of professional and academic leaders.

Drs. Doug Smith and David Jack are faculty colleagues in Baylor's School of Engineering and Computer Science. But the relationship between Smith, an associate professor and Jack, an assistant professor, goes back much further.

Smith and Jack met when Jack was an undergraduate student in Smith's machine design course at the Colorado School of Mines. Smith gave his students a simple quiz on the first day of class meant to help him assess the students' comfort with some simple engineering concepts. Rather than using simple formulas to approximate the answers to the posed questions, Jack took a different tactic, beginning with the first principles of engineering and deriving an approach to solve the problem more precisely.

The resulting discussion of Jack's approach formed the beginning of a mentoring relationship that has seen Jack progress from Smith's undergraduate student to graduate assistant to faculty colleague. Along the way, Jack says, Smith taught him more than just how to be a successful engineer and productive academic.

Smith's concern for his students' personal well-being and the priority he placed on his family when making career decisions struck Jack as a model to follow throughout his own career.

Shortly after Jack finished his undergraduate degree, Smith left the Colorado School of Mines and accepted a position at the University of Missouri. While a professor's decision to move from one university to another is not surprising in itself, Jack says the reason Smith chose Missouri resonated in his own life.

"Dr. Smith had offers from a lot of schools, but he chose Missouri because it was the best environment for his family," says Jack. "That example was very powerful for me as I was very recently married myself. It confirmed for me that he was someone I wanted to continue to have as a mentor."

Jack followed Smith to Missouri, where he earned his Ph.D. in mechanical engineering. Jack went on to accept a faculty position at Baylor, where he says he found an ideal environment in which he could be active in teaching graduate and undergraduate students while also conducting research on nondestructive testing and analysis methods for composite materials.

"I knew from working with Dr. Smith how much a student could benefit from a faculty mentor who was highly accessible. Baylor is not the only place that encourages that kind of

> "It was clear that the university, from top administration all the way to the faculty, was committed to providing the facilities and infrastructure necessary to build the program and train students well."

arrangement, but it is one of very few that holds that philosophy on teaching and also has the goal of moving into the top research ranks."

In 2012, with Smith still at the University of Missouri and Jack on the faculty at Baylor, Smith visited Baylor's campus at Jack's invitation to give a presentation on his research to engineering faculty and students. That visit, and the discussions that followed over the next few months led Smith to make another move – this time to join his former student at Baylor. Now, nearly 15 years after that first meeting as teacher and student, Smith and Jack are once again on the same campus. Now, as colleagues, Smith and Jack both mentor students and conduct research in the Baylor Research and Innovation Collaborative.

Smith was drawn to Baylor by the opportunity to help the School of Engineering and Computer Science grow its new Ph.D. program in mechanical engineering, and he was also excited by the university's commitment to research.

"I really liked what I saw going on at Baylor," he says. "It was clear that the university, from top administration all the way to the faculty, was committed to providing the facilities and infrastructure necessary to build the program and train students well."

At Baylor, Smith continues his research agenda focused on creating computational and numeric models of the process of creating composite materials. His numerical simulations are aimed at predicting the way fibers will be arranged in a manufactured part, helping to ensure the finished product will have the necessary strength to accomplish its task.

Training and mentoring students, Smith says, is at the core of a faculty member's job function, and he believes a critical part of that mentorship is helping students see how their work relates to the larger academic community.

"A big part of what we offer our students is perspective," Smith says. "We work with very bright students, but they may not have a broad view of how their projects fit into the field as a whole. As a mentor, I try to help students down the path of finding their niche in the discipline."

Part of that guidance involves giving students the chance to present their work and receive feedback from a professional audience at meetings and conferences. Sarah Stair, a graduate student pursuing her master's degree in mechanical engineering under Jack's mentorship, says providing the opportunity to present at conferences is a key part of the mentorship she's received at Baylor.

"Dr. Jack has been an outstanding mentor. He provides ample time for one-on-one meetings where he answers questions and provides perspective that you can't get from talking to other students. I've also had the opportunity to present my work at professional meetings and network with other students and industry professionals."

Stair conducts research focused on nondestructively analyzing products made of composite materials to compare the strength of the final, manufactured part to the original design specifications. Her research has already caught the attention of industry, leading her to receive funding for the work from L-3 Communications.

Her research posters and papers have earned honors at conferences where her work competed against not only master's students, but also Ph.D. students and postdoctoral scholars from other universities.

At the 2013 American Society for Composites Annual Technical Conference, Stair earned top-four finalist recognition in the "Best Presentation or Paper" category, along with a second place finish in the graduate poster competition at the Society of Plastics Engineers Automotive Conference and Exhibition. She was also one of only 45 students out of 750 applicants awarded a travel grant from the National Science Foundation, which facilitated her participation in the International Mechanical Engineering Congress and Exposition.

Jack enjoys working in an environment where professors work with small groups of students and pass on their skills to the next generation of scholars. But Jack cautions that it takes special qualities in both students and teachers to achieve optimum success.

"It takes patience on both sides. Both the student and the teacher have to be willing to take a step back from the specific topic to find the foundations of a problem. That willingness to think about things more broadly is what helps you see the connections between things that don't seem to relate to one another."

BONDED TOGETHER

Composites are strong, lightweight materials that can be used in applications from consumer products to aerospace components. They can be made from synthetic or natural fibers, creating the opportunity for more environmentally sustainable manufacturing processes.

Faculty and students in Baylor's department of mechanical engineering are studying a variety of aspects of composite materials, from modeling the orientation of fibers in finished parts to nondestructive testing methods that allow end users to evaluate the strength of a composite part without breaking it.

Baylor's composites research is currently funded by a variety of government and industrial sponsors including the National Science Foundation and L-3 Communications.

BRIC is the first facility in the Central Texas Technology and Research Park, a discovery park where university researchers, business development experts, industry leaders and workforce development professionals come together to move ideas from initial concept to the marketplace.

BAYLOR RESEARCH AND INNOVATION COLLABORATIVE (BRIC)

The BRIC is a 330,000 square-foot facility that was once a manufacturing plant for General Tire and Rubber Co. Now, the long-dormant building is once again a center of economic development and regional pride.

Mentorship is important in all fields, not just science and engineering. In Baylor's applied music programs, faculty and students alike benefit from a culture that places a premium on mentoring relationships.

Jeff Powers, an associate professor of horn in Baylor's School of Music, meets weekly with his students over the course of their undergraduate careers, allowing him to provide guidance in matters both personal and professional.

"I see my students grow during their entire time here. That close contact gives me a special opportunity to train them in what it means to be a young professional, not just a musician."

Music instruction can go beyond just showing students the "tools of the trade," Powers says. He believes one of his main functions as a mentor is to help his students navigate the human elements of a career in music.

"Performing in an ensemble group gives students a great perspective on the importance of interpersonal relationships. Whether they are interested in becoming performers or music educators, we help them learn to be a professional and demand the same excellence in themselves that they expect from others."

While faculty in the sciences might carry out experiments in a laboratory or collect samples in the field, music faculty are more likely to undertake composition, performance or recording projects.

Powers says that in the same way that a scientific experiment yields data for future investigators, musical recordings can preserve musical styles and provide reference materials for performers and students. Powers has recorded a number of albums of music by Flemish composers, helping to preserve and disseminate works from Flanders, the northern region of Belgium.

"It's extremely important that faculty remain active in our fields," said Powers. "Being actively involved in performing and recording at the highest levels keeps us current and vital, as well as helping us stay in touch with others in the music community."

Those connections are important for helping Baylor graduates as they enter the job market or pursue admission at top graduate schools. Indeed, recent graduates from Powers' studio have received scholarships and assistantships for graduate study to prestigious institutions including the Juilliard School.

Other former students are now active in professional ensembles such as the National Orchestra of Belgium and the U.S. Army Field Band. In addition, numerous music education graduates are teaching in middle and high school music programs across the country.

Although university faculty may work in a range of different fields and conduct research using a variety of different methods, one thing that doesn't change is the importance of mentorship. By providing opportunities for students to work closely with faculty mentors, Baylor is building a pipeline that is supplying the next generation of leaders.

ASSOCIATE PROFESSOR JEFF POWERS + ANDREW MEREDITH

TAPPING INTO A RICH VEIN OF TALENT

BAYLOR'S PROXIMITY *to many of* TEXAS' TOP MEDICAL INSTITUTIONS *ideally positions the university for* PRODUCTIVE RESEARCH PARTNERSHIPS.

In 1886, Baylor trustees realized that changing demographics and paths of commerce across Texas made a move from the university's founding site in Independence an absolute necessity. Their choice of Waco was a wise one, but they could not have known just how prescient that decision would prove to be.

Today, Baylor University stands amid a network of prestigious medical research and health care institutions such as the Baylor College of Medicine in Houston, Baylor Scott & White Health in Dallas and Temple and the Baylor Research Institute in Dallas. This rich concentration of health care institutions represents a potential for collaboration that multiplies many times over the capacity for innovation of each individual institution. And it's a potential that is being realized in life-saving ways.

DR. JOHN CHAPUT

Four years ago, Dr. John Chaput, orthopedic spine surgeon at Scott & White Hospital in Temple, Texas, began looking into an infrequent but serious injury to the occipital-cervical complex, or "OCC," the region where the spine joins the skull.

Usually associated with severe "whiplash" injuries, the condition occurs when ligaments that connect the very top of the spine to the skull become strained, enlarging the normally tiny gap between the two.

Chaput discovered that even a small widening of the basion-dens interval, or "BDI," as the gap is known, can result in a fatal post-trauma injury. But the injury is often missed because CT scans can't show ligament damage.

"It's one of those rarer injuries, but it's a preventable source of paralysis," Chaput explains. "Basically at that level of injury, the patient loses the ability to breathe, so if it's not caught it's essentially a death sentence."

He realized there needed to be a way to measure the BDI automatically. Ideally, the gap would be measured by the CT scanner's computer as a part of the scanning process. Then it could display the data without any action required by the physician.

Enter Dr. Brian Garner, mechanical engineering professor at Baylor, just 40 miles up the Interstate. When Garner's daughter broke her arm, he became friends with Dr. Robert Probe, chair of Baylor Scott & White's orthopedic department. On learning of Garner's biomechanical modeling work, Probe introduced him to Chaput. The surgeon described his idea to Garner and handed him the study, but it sat on Garner's desk several months for want of someone to take it on.

"It can be a little difficult to get students to contribute effectively in my research area because it generally involves a combination of familiarity with mechanical engineering and computer science," Garner says. "We have many students familiar with one or the other, but not many familiar with both."

Then Jacob Hoffman walked into Garner's office.

"My junior year I was looking for a research project," recalls

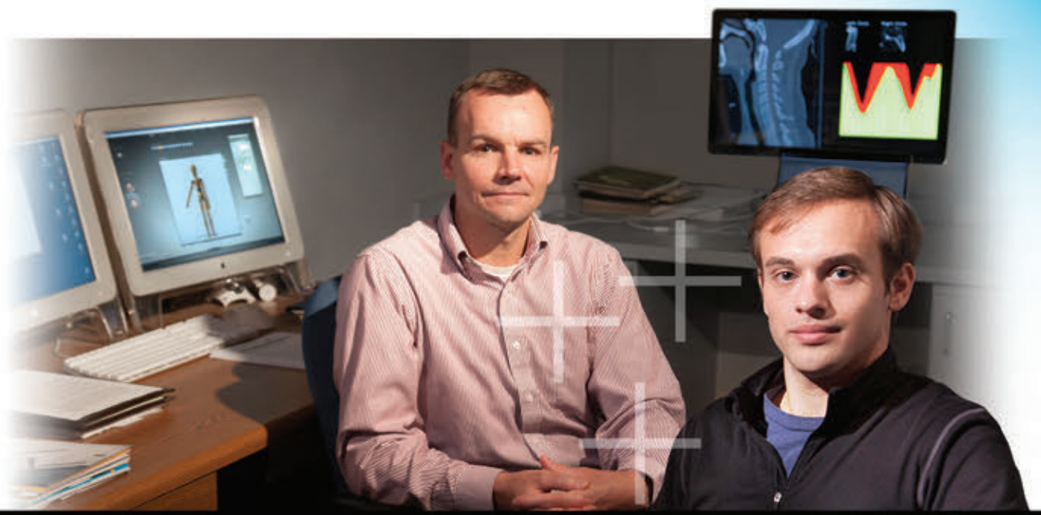
OTHER BAYLOR COLLABORATIONS AND INITIATIVES

The OCC collaboration is just one instance in which Baylor researchers and graduate students are teaming with the rich vein of regional research talent.

Under the direction of Dr. Bob Kane, researchers with the Baylor Institute of Biomedical Studies are working with scientists and physicians at the Baylor Research Institute, Baylor University Medical Center, and other institutions to conduct research on cancer and a host of other diseases. Baylor interns serve with the Baylor College of Medicine's Section for Infectious Diseases in Houston, and Dr. Lea Steele's Veterans' Health Research Program is working in partnership with Baylor Scott & White Health and the Department of Veterans Affairs on research into Gulf War illness and other conditions afflicting former service men and women.

Last March, Baylor's Office of the Vice Provost for Research and Baylor Scott & White organized a two-day Enhancing Healthcare Through Collaboration retreat aimed at fostering collaborative research between regional institutions. Held at the Baylor Sciences Building, the retreat brought together over a hundred researchers and administrators from Baylor University, the Baylor Health Care System, Baylor Scott & White Health and the Texas A&M Health Sciences Center to hear presentations on melanoma, immunology, diabetes, Gulf War illness and spine remodeling research, and to participate in topic-focused breakout sessions.

The Collaborative Faculty Research Investment Program (CFRIP) is sponsored jointly by Baylor University, Baylor Scott & White Health, Baylor Health Care System and the Baylor College of Medicine to provide seed funding for inter-institutional and interdisciplinary research project teams to position them to compete successfully for externally funded grants.



DR. BRIAN GARNER + JACOB HOFFMAN

Hoffman, now a Baylor graduate student who grew up in tiny Bergheim, near San Antonio.

Garner asked about projects Hoffman had been involved with, but didn't hear anything particularly promising. As Hoffman was about to leave, Garner asked, "Oh by the way, do you know how to program?"

"I said, 'Yes,' and Dr. Garner said 'Bingo, you've got the OCC project.'"

Garner mentored Hoffman early on, but left him free to develop his own ideas.

"Jake is a very independent worker, and took off with the project from the very beginning," Garner relates.

Chaput was similarly impressed. "I don't think I've ever had anyone as autonomous as Jacob in the 10 years that I've been on staff. He grew a lot along the way and the project grew with him."

Still, Hoffman hit some obstacles early on.

"I wasn't sure how to tell the computer to distinguish between bone and non-bone, because what might appear light or dark in one image might not in another," he says.

Hoffman devised a scheme to distinguish bone from soft tissue by mathematically comparing the individual dots or "pixels" of the electronic image with those produced by random static.

"That was a major breakthrough for me, to be able to adaptively tell what was bone and what was not," Hoffman says. "That was the point (Garner) got really excited and began to create some of his own algorithms while I went forward with mine."

In the summer of 2012, before starting graduate studies under Garner, Hoffman continued working on the project at Baylor Scott & White as an intern. The system could measure the BDI very quickly and accurately, but the physician still had to select the bones to be measured.

"Dr. Chaput wasn't satisfied with that, and he kept pushing me saying, 'I need to see it fully automatic,' but I didn't think my system could do that; I said it would take a year to develop."

But Hoffman didn't have a year—he needed to wrap the project up in just two months.

"Actually, I ended up being able to characterize the bones in those two months, and that was the second breakthrough for the project. The rest has just been polishing it up."

"That was a major breakthrough for me, to be able to adaptively tell what was bone and what was not."

Chaput sums it up well.

"The project exceeded expectations on every front," he says. "It's that type of work in the future that is going to free up the physician from the huge amount of data that is now almost a burden to us. Instead of a surgeon, researcher or radiologist looking through hundreds and hundreds of pictures, the software can do it and call out the data or the point of interest; then the physician can assess it. Or, it can serve as an additional safety check in a stressful, fast-paced trauma situation."

As a model of collaboration, the project could hardly have been more successful: the patent application lists researchers from both institutions as co-inventors. And the effort has had the effect of opening an already open door even wider.

"It's a collaboration that has direct clinical application," says Charlette Stallworth, Baylor Scott & White Health's associate vice president, research business development. "It provides us with a template, a way that our other clinicians may be able to advance their own ideas using the resources available to us at Baylor."

GUARDING THE WATERS

A CEO *teams with* ACADEMICS *to help protect our* MOST PRECIOUS NATURAL RESOURCE

Paul Pearce— microbiologist, entrepreneur, CEO—had a problem. And neither his Ph.D. nor 20 years in the water quality and environmental assaying business had prepared him to tackle it.

In 1993, Pearce's newly founded Nova Biologicals became the first private laboratory approved in Texas to perform water quality compliance testing of public water systems. In 20 years, the business grew from 50 samples the first month to a monthly volume of nearly 11,000 today. That steady growth allowed Pearce to take Nova into other, more specialized and sophisticated services, such as evaluating new antibacterial and antiviral agents, and testing medical devices.

Business was good. Nova began to earn hard-to-get federal certifications from the likes of the FDA and the EPA, garnering industry accolades along the way.

Then 9/11 happened.

Soon after, the Department of Homeland Security placed public water supplies high on the list of potential terrorism targets, and ordered all water suppliers to conduct vulnerability assessments. While helping some of his clients produce those assessments, Pearce came to see improving water-well security as a growing and urgent necessity.

Consulting with an engineering firm, he developed a device to help prevent tampering with municipal wells. His "casing vent security device"—CVSD, for short—had a potential market upward of half a million wells. But the initial design weighed 500 pounds and sold for $40,000 each. After deploying the first dozen or so units, Pearce realized the CVSD would need an extreme makeover to be successful in the marketplace. But where could he go to get help with redesign?

Where indeed?

Pearce's family roots run way deep in Baylor soil. Though not a Baylor grad himself, he is the lone holdout in the family. His father, Joe Jack Pearce, was an All-American, All-Southwest Conference quarterback and captain of the 1934 Bears. Going back even further, Pearce's grandfather, Joseph, and grandmother-to-be, Lizzy Carroll Jones, served as president and vice president of the Baylor class of 1902. All his siblings and

DR. PAUL PEARCE

children are "green and gold" through and through, and Pearce himself is an assistant professor of pathology at Baylor College of Medicine.

So when his business partner, Baylor-alumnus Stan Craig, suggested they call Baylor for help, Pearce knew it would be the next best thing to working with family. Shortly, he met with Jim Kephart, Baylor's assistant vice provost for research and director of technology commercialization and industry engagement.

"Paul came to Baylor for help redesigning his water well security system," Kephart recalls. "His original design dated from 2002, and over the years, many of the components had been surpassed by more effective technologies."

Kephart introduced Pearce to Drs. Brian Garner and Ian Gravagne, from Baylor's School of Engineering and Computer Science. The pair took over from there and assembled a team of senior engineering students who pounced on the CVSD project.

"I really liked the way they handled the students," Pearce says of Garner and Gravagne. "They told the team, 'OK guys, you've got a job to do here, go do it! If you run into problems come back and talk to us, but we're not going to solve it for you.' I know the students got a lot out of it."

In just nine months, the students completely redesigned and prototyped a new CVSD that was roughly 1/10th as large and seven times lighter than the original device. And they added new security and communications features to boot, while cutting the price of manufacture by more than half.

Pearce was impressed. "I'm extremely pleased with the way the project came out and where we are. It's been a very short time for product development, especially considering the fact that we're not a product company."

In fact, things had gone so well Pearce immediately began searching out ways to employ more of Baylor's resources to his advantage.

He didn't have to look far.

Across the Brazos River at the BRIC—Baylor Research and Innovation Collaborative—Dr. Greg Leman offered the product commercialization services of LAUNCH, the BRIC's in-house innovative technology accelerator affiliated with the Hankamer School of Business.

"The next goal was to come up with a business plan for global commercialization. Greg Leman spearheaded that," Pearce says. Leman turned the project over to a Baylor "i5" team based in Macao.

"I went to Macao in early July (2013) and met with the team," Pearce relates. "Over the next six weeks they produced a hundred-page plan for global commercialization of the unit. Now we've identified a short list of strategic partners and a manufacturing capability."

Today, with patent protections in place and both domestic and international markets wide-open, the Nova CVSD is ready for prime time, giving the company a new, hardware-based revenue stream to complement its full menu of testing and assessment services.

"The process worked," Pearce says. "It's been one of my goals for years and years to take education out of the ivory tower and utilize it in a business sense, and to do it in a way that benefits everyone involved.

"If there's anything that I'm really thankful for and proud of, it's that I got to go up there every week and meet with the design team and talk to them, answer their questions, and work through the process with them. I wish more people could appreciate the ability to interface with academics at the university level."

i5 TECHNOLOGY COMMERCIALIZATION PROGRAM AT BAYLOR

Baylor's i5 program brings together the brightest cross-cultural students from business, science, engineering, and intellectual property law to work on real-world, technology-commercialization projects.

Using a proven Accelerated Commercialization Process and guided by Baylor faculty, teams of interns conduct a 10-week, three-phase effort resulting in customized, fully validated business plans for companies seeking to compete successfully in overseas markets.

Current and prior Baylor i5 clients include start-ups and small-to-mid-size companies seeking to grow, as well as such established technology leaders as Hewlett-Packard Co., Dow Corning and National Instruments.

www.baylor.edu/baylori5

GRADUATE DEGREES AT BAYLOR

Accounting MAcc, MAcc/BBA

American Studies MA

Air Science and Environment IMES

Army Baylor University Graduate Program in Health & Business Administration, Fort Sam Houston MHA, MHA/MBA

Army Baylor University Entry Level Doctoral Program in Physical Therapy, Fort Sam Houston DPT

Army Baylor University Doctoral Fellowship in Orthopaedic Manual Therapy, Brooke Army Medical Center, Fort Sam Houston, TX DScPT

Army Baylor University Doctoral Residency in Sport Physical Therapy, West Point, NY DScPT

Biology MA, MS, PhD

Biomedical Engineering MSBME, BSECE/MSBME, BSME/MSBME

Biomedical Studies MS, PhD

Business Administration MBA, MBA/JD, MBA/ME, MBA/MSW, MBA/MDiv, MBA/MSIS

Business Administration, Dallas, Austin EMBA

Chemistry and Biochemistry MS, PhD

Church Music MM, MM/Div, DMA, PhD

Clinical Psychology PsyD

Collaborative Piano MM

Communication Sciences and Disorders MS CSD, MA

Communication Studies MA

Computer Science MSCS

Conducting MM

Curriculum and Instruction EdD, MA, MSEd, PhD

Earth Science MA

Ecological, Earth and Environmental Sciences PhD

Economics MS

Educational Administration MSEd

Educational Psychology MA, MSEd, EdS, PhD

Electrical and Computer Engineering MSECE, BSECE/MSECE, MSECE/PhD

Engineering ME, ME/BMA

English MA, PhD

Entrepreneurship MBA

Environmental Biology MS

Environmental Science MES, MS

Exercise Physiology MSEd

Family Nurse Practitioner BSN/DNP

Geology MS, PhD

Health Care Administration MHA/MBA

History MA, PhD

Information Systems MS, PhD

International Journalism MIJ

International Relations MA

Journalism MA

Kinesiology, Exercise Nutrition, and Health Promotion PhD

Mathematics MS, PhD

Mechanical Engineering MSME, BSME/MSME, PhD

Museum Studies MA

Music Composition MM

Music Education MM

Music History MM

Music Performance MM

Music Theory MM

Neonatal Nurse Practitioner BSN/DNP

Nurse-Midwifery BSN/DNP

Nursing Leadership and Innovation MSN

Nursing Practice DNP

Nutrition Science MS

Philosophy MA, PhD

Physician Assistant Studies, Brooke, Madigan, Darnell and William Beaumont Army Medical Centers DScPAS

Physics MS, MA, PhD

Piano Pedagogy and Performance MM

Political Science PhD

Psychology PhD

Public Health MPH

Public Policy and Administration MPPA, MPPA/JD

Religion PhD

Social Work MSW, MSW/MDiv

Sociology MA, PhD

Spanish MA

Sport Management MSEd

Sport Pedagogy MSEd

Statistics MS, PhD

Taxation MTax, MTax/BBA, MTax/JD

Theatre Directing MFA

Theatre MA

US Military – Baylor Nutrition MS

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Baylor Advanced Research Institute
Baylor Institute for Air Science
Baylor Institute for Studies of Religion
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Center for Christian Education
Center for Christian Music Studies
Center for Community Learning & Enrichment
Center for Community Research & Development
Center for Drug Discovery
Center for Family & Community Ministries
Center for International Education
Center for Mass Spectrometry
Center for Ministry Effectiveness & Educational Leadership
Center for Molecular Biosciences
Center for Reservoir & Aquatic Systems Research
Center for Spatial Research
Institute for Faith and Learning
Institute of Biomedical Studies
Institute of Ecological, Earth, & Environmental Sciences
Institute for Oral History
J.M. Dawson Institute of Church-State Studies

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