



TEXAS TECH UNIVERSITY
HEALTH SCIENCES CENTER
School of Medicine™

Training Tomorrow's Physicians,
Finding Tomorrow's Cures.



A LETTER FROM THE DEAN



Medical students are our greatest priority! As educators we are judged by their ability to provide compassionate, skilled health care to their patients. Each student we graduate will practice medicine for 30 years or more and see thousands of patients, having an overwhelming impact on the quality of life.

As dean, I hope to facilitate an exceptional learning environment by working with faculty, residents, hospital administrators and community leaders to continually improve the school. TTUHSC is a unique place. As I meet with our students, I ask them to support and help each other by treating one another with the same respect they plan for their patients. Students are not competitors, but rather colleagues working together to create a strong culture for learning.

Our society is changing, health care is changing and medical education must adapt to these changes. Ambulatory and chronic disease experiences must be improved and basic science must be integrated with clinical experience. Ethical issues and respect for cultural differences are vital. It is apparent that geriatric principles of care will pervade most clinical specialties. We must teach students to avoid errors and communicate well with patients using appropriate language and bedside manner, while adapting to the financial and time efficiency realities of our modern health care system.

Today's health care environment is experiencing exponential growth in the need for knowledge and technology amidst a diverse, demanding, educated and chronically ill population. Faculty members on all our campuses are engaged in an ongoing effort to evaluate and change curricula



to meet the needs of medical students and enhance their future success as physicians. However, curriculum alone will not guarantee a first-class teaching program. Clinical teaching in a setting of high-quality patient care standards and patient satisfaction is imperative. Master teachers, who patiently care about the success of students require encouragement and development. Curious, enthusiastic, altruistic students who learn to become independent learners is our ultimate goal.

I believe we must engage our students as if they were our own children going into the medical profession. How do we want them prepared for this difficult line of work? This continuing quest requires that we guarantee outstanding role models and provide the types of experiences our students will need for lifelong success. In part, we will measure our achievement by theirs, benchmarked against United States Medical Licensing Examination (USMLE) scores above the national average, evaluations by residency program directors, success in the National Resident Matching Program and a positive reputation in the community. Together we are seeing these markers rise, and I look forward to the continued success of those we have trained.

A handwritten signature in blue ink that reads "Steven Berk M.D.".

Steven L. Berk, M.D.

Dean, Texas Tech University Health Sciences Center School of Medicine



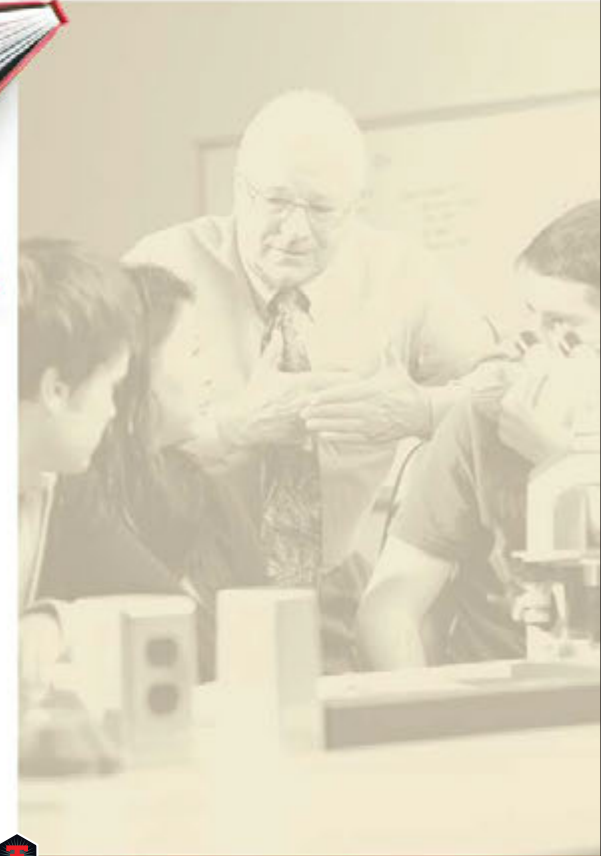


EDUCATION

The School of Medicine has restructured curriculum to integrate clinical experiences into quality basic science training. Competency-based objectives are emphasized, focusing on the skills and compassion that distinguish excellence in patient care. Students are trained to manage and use the best and most current evidence-based methods and knowledge for practice, applying them in a humane and sensitive manner. Innovations include:



- two-year early clinical experience, supported by community-based physicians that includes the use of standardized patients for instruction and evaluation;
- continuity clinic giving third-year students the opportunity to follow the care of certain patients during the course of a year (one of the few such programs in the country);
- third-year symposium to reintroduce and reemphasize basic science principles in clinical medicine; and
- geriatric curriculum supported by a multi-million dollar Donald W. Reynolds Foundation grant.



The School of Medicine offers a joint program with the Texas Tech University Rawls College of Business Administration that allows students to also receive a Master of Business Administration degree during the normal four years of medical school. The goal of this program is to produce outstanding physicians with additional insight into the intricacies of health care management systems, finance, economics and delivery.

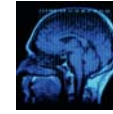
Students interested in pursuing a career in academic medicine as a *physician-scientist* may concurrently enroll in the School of Medicine and Graduate School of Biomedical Sciences. This opportunity permits



House Bill 498 creating the School of Medicine was signed on May 16, 1969.

Vaughan Lee, Ph.D.,
2008 Teacher of the Year (above)
Jean Strahlendorf, Ph.D.,
2008 Teacher of the Year (bottom)
Harry Weitlauf, M.D., cell biology
and biochemistry chairman (right)

EDUCATION



students to complete the requirements of the M.D. and Ph.D. degrees. Completion of the M.D./Ph.D. program normally takes six to seven years.

Beginning in 2009, a student, while completing their medical degree, may obtain a Jurisprudence Doctorate through the Texas Tech University School of Law. This six-year program prepares graduates to become leaders in such areas as health care policy, bioterrorism and medical law.

Educational Outcomes

The School of Medicine is the number one ranked allopathic medical school in Texas for the percentage of graduates practicing a primary care specialty in the state. Almost 50 percent of our graduates remain in Texas for residency training and more of our students than the national average match their first choice residency program. Additionally, for the last four years a majority of our graduates received superior overall ratings from residency program directors.

In 2008, the SOM reached a landmark measure of quality with the 100 percent pass rate on the United States Medical

Licensing Exam I, given to students preparing to enter their third year of medical school.

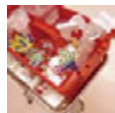
500
LOCAL PHYSICIANS



In 2008, the School of Medicine reached a landmark measure of quality with the 100 percent pass rate on the United States Medical License Exam 1, given to students preparing to enter their third year of medical school.



Lia Bruner, M.D., 2008 Dean's Educational Innovation Award (above)
Donovan "Kip" Murphy, third-year med student (bottom)
Thomas McGovern, M.D. psychiatry (left)



EDUCATION

Class of 2011

Applications: **3,038** (*highest ever*)
 Total interviews: **729**
 Matriculants: **140**
 Increase in total applications from 2006: **182**
 Matriculants' Mean GPA: **3.66**
 Matriculants' Mean MCAT: **30.2**
 Applicants' Mean MCAT: **26.65**

Class of 2013

Applications: **2,943**
 Total interviews: **639**
 Matriculants: **140**
 Matriculants' Mean GPA: **3.69**
 Applicants' Mean MCAT: **27.0**

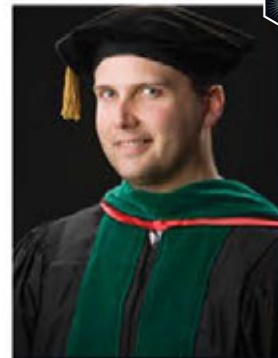
Class of 2012

Applications: **2,964**
 Total interviews: **742**
 Matriculants: **140**
 Matriculants' Mean GPA: **3.66**
 Matriculants' Mean MCAT: **29.10**
 Applicants' Mean MCAT: **27.2**



Residency Programs

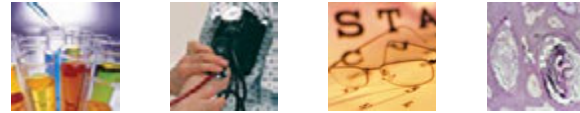
Our residency programs are accredited by the Accreditation Council for Graduate Medical Education (ACGME), which establishes national standards for programs and regularly inspects those programs. As of Sept. 1, 2007, 342 resident physicians serve the School of Medicine in 17 primary, specialty care and sub-specialty areas. Residency programs include anesthesiology, internal medicine, pediatrics, obstetrics and gynecology, psychiatry, dermatology, orthopaedics, family and community medicine, pathology, and ophthalmology. In 2007, a newly established urology residency program received provisional accreditation. Approved fellowship programs include cardiology, geriatric medicine, nephrology, sports medicine – family medicine, sports medicine – orthopaedics and pain management. Residency programs in neurology, oncology and ENT (ears, nose, throat) and fellowships in gastroenterology and infectious diseases are planned for the future.



The School of Medicine operates 37 individually accredited residency programs and nine fellowship programs.

Director, Orthopaedic Surgery and Rehabilitation Residency Program, George Brindley, M.D., (above) Taylor Ratcliff, Class of 2009 (bottom) Grand Rounds, Department of Surgery (right)

RESEARCH



Major areas of research focus within the School of Medicine include treatment and prevention of cancer, healthy aging, infectious diseases, causes prevention and treatment of addiction and alcoholism, and advances in pain management. Expansion of the research program is guided by the National Institutes of Health Roadmap for Medical Research. This innovative approach is designed to accelerate efforts across the nation to discover knowledge and translate it into effective prevention strategies and new treatments. Advancements in the School of Medicine are encouraged through bridge programs and seed grants for current faculty, promotion of collaborative endeavors within the school and with other qualified researchers across the country and ongoing recruitment of nationally recognized researchers.

Support of Current Faculty and Collaboration

A long-standing Faculty Seed Grant Program enables many researchers to begin new studies that can later receive funding from external sources. A new Bridge Grant Program helps faculty maintain active research programs when their current funding lapses for one or two cycles. The Clinician/Basic Scientist Seed Grant Program provides resources to foster translational research combining the talents of clinical and basic scientists in the school. Most recently, a core facility for faculty has been developed and equipped with state-of-the-art instrumentation supporting cancer research. Other efforts underway include offering seminars on writing grant proposals, engaging the use of grant-proposal consultants and finding staff in-house who can help in individual cases.

Faculty Recruitment

While recruiting new faculty in science and clinical departments, primary consideration is given to those with existing funding from the National Institutes of Health or individuals with the potential to receive NIH funding in the near future. Additionally, focused recruitment for physician-scientists is an important strategy allowing joint appointments in basic science and clinical departments. Nationally competitive start-up packages, in addition to provision of adequate laboratory space, are offered. Protected time is granted to clinical faculty for research work to develop preliminary data for grant applications and to conduct funded research.



With more than \$5 million in National Institutes of Health (NIH) funding and an additional \$2.3 million in other state and national funding, School of Medicine researchers are unlocking the mysteries of Alzheimer's Disease, cancer, diabetes, parasitic disease and more.

*Susan Bergeson, Ph.D.,
pharmacology/neuroscience (above)
Elsa Bello-Reuss, M.D.,
internal medicine (bottom)
Daniel Hardy, Ph.D.,
cell biology and biochemistry (left)*



RESEARCH

Research Centers, Consortia, Collaborations, and Projects

Cancer Research Group

This new program coordinates interactions and collaboration among more than 80 cancer researchers on the TTUHSC and Texas Tech University campuses. Current areas of focus include:

- Σ • The South Plains Oncology Consortium (SPOC) to develop a cancer research network center in West Texas (www.sponc.org)
- Σ • recruitment of an internationally renowned research group at the forefront of developing new cancer drugs for children and adults



Directors: *C. Patrick Reynolds, M.D., Ph.D.*, director, TTUHSC SOM Cancer Center, cell biology and biochemistry, pediatrics and internal medicine
 806-743-1558
patrick.reynolds@ttuhsc.edu

Everardo Cobos, M.D., director, Clinical Oncology Program, internal medicine
 806-743-3215

Barry Maurer, M.D., director, Developmental Therapeutics Program, internal medicine, pediatrics



Almost half of the School of Medicine graduates remain in Texas and almost half enter primary care residencies—areas experiencing shortages in Texas.

Everardo Cobos, M.D., internal medicine-oncology, Cancer Research Group (above)
Joehassin Cordero, M.D., surgery (bottom)
Barry Maurer, M.D.,
Patrick Reynolds, M.D.,
Ming Kang, Ph.D.,
Cancer Research Group (right)

RESEARCH



Laura W. Bush Institute for Women's Health (LWBIWH)

The mission of the LWBIWH is to cultivate the advancement of multidisciplinary science in women's health and to promote the well-being of women through research, education and clinical outreach. The impact of integrating our research with faculty and researchers from across the Texas Tech University System is making an impact on women's health across West Texas, the nation and the world.

Directors: *Marjorie R. Jenkins, M.D.*, internal medicine
806-354-5480
marjorie.jenkins@ttuhsc.edu
www.ttuhsc.edu/laurawbushinstitute

Laura W. Bush
INSTITUTE for WOMEN'S HEALTH

Aging and Quality of Life in the Southwest: A Comprehensive Competency-Based Program to Strengthen Physicians' Training in Geriatrics

Funded by the Donald W. Reynolds Foundation, this project is defining new models for geriatric teaching and patient care. Included is the implementation of an integrated geriatrics track for students and residents in addition to the development of a strong geriatrics patient practice. Unique elements in the curriculum include the creation of geriatric portfolios and the Texas Tech Geriatrics Podcast.
www.ttuhsc.edu/centers/aging/reynolds/homepage.aspx



Principal Investigator: *Andrew Dentino, M.D.*, family medicine
806-743-2757
andrew.dentino@ttuhsc.edu

The Texas Tech MedCast was chosen as the 2008 Product of the Year by POGOe, the Portal of Geriatric Online Education. The MedCast Reynolds Geriatric Series, developed by the Department of Family and Community Medicine, offers audio podcasts of various key geriatric topics and is available through portable media players for students, residents or practicing physicians. The series provides geriatric content with the ability to pause, rewind and repeat content while in the gym, walking, riding or other activities.

*Marjorie Jenkins, M.D.,
internal medicine, executive director,
Laura W. Bush Institute for Women's
Health (above)
Andrew Dentino, M.D.,
internal medicine and family
medicine, geriatrics (bottom)
Former First Lady Laura Bush at the
dedication of the Laura W. Bush
Institute for Women's Health (left)*

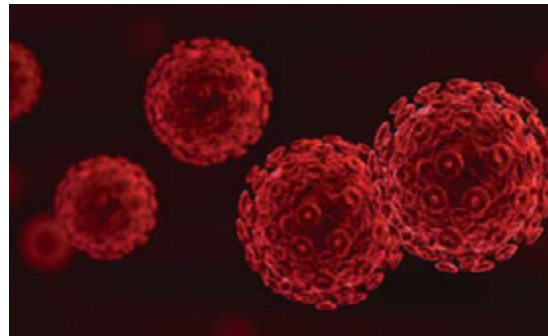
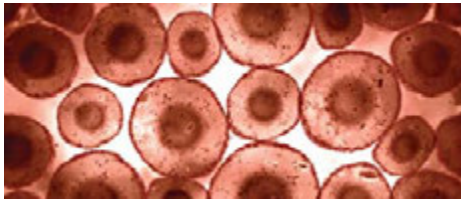


RESEARCH

Texas Tech Blood Substitute Commercialization Program

The Texas Tech blood substitute, HemoBioTech, is considered a second-generation product to address hemoglobin toxicity issues that have stymied the commercial development of other first-generation products. Currently, activities are underway to meet U.S. Food and Drug Administration requirements for clinical trials. Phase I should be completed during 2009.

Director: Jan Simoni, Ph.D., surgery
806-743-2460, ext. 246
jan.simoni@ttuhsc.edu



Center for Membrane Protein Research

To a great extent, biomedical research in the 21st century will focus on prototypical proteins and protein families. New knowledge of membrane proteins guides the design of new therapeutic approaches. Scientists in the TTUHSC Departments of Cell Physiology and Molecular Biophysics, Cell Biology and Biochemistry and Pharmacology and Neuroscience are teaming with Texas Tech University faculty in the Departments of Physics and Chemistry.

Director: Luis Reuss, M.D., cell physiology and molecular biophysics
806-743-2627
luis.reuss@ttuhsc.edu
www.ttuhsc.edu/som/physiology/programs/cmpr.aspx



From student events to benefit local charities to physician leaders on local, state and national boards to sponsorship of local non-profit efforts, the School of Medicine is a constant thread in the fabric of the community.

Jan Simoni, Ph.D.,
surgery (above)
Luis Reuss, Ph.D.,
dean, Graduate School of
Biomedical Sciences (bottom)
Lab construction for
Cancer Research Program (right)

RESEARCH



South Plains Alcohol and Addiction Research Center (SPAARC)

This project is developing translational, multidisciplinary and collaborative approaches to understanding the consequences of alcohol and drug use. One specific focus is the immediate and long-term effects of binge drinking on the brain and its ability to function, specifically examining elements critical for success in life such as planning and decision-making skills.

Director: *Peter Syapin, Ph.D.* pharmacology and neuroscience
806-743-2425
peter.syapin@ttuhsc.edu
www.ttuhsc.edu/centers/spaarc

Center for Cardiovascular Disease and Stroke (CCDS)

This center focuses on supporting basic and clinical research related to cardiovascular function and disease, especially the management and treatment of cardiovascular diseases in the Hispanic population of rural West Texas.

Director: *L.O. Lutherer, M.D., Ph.D.*, physiology
806-743-2532
lorenz.lutherer@ttuhsc.edu

International Pain Institute

Collaborative research is conducted by basic and clinical scientists to advance the scientific understanding of pain management and increase options for effective new treatment.

Contact: *James E. Heavner, D.V.M., Ph.D.*, anesthesiology
806-743-2916
james.heavner@ttuhsc.edu



In March 2009 the Liaison Committee on Medical Education (LCME) conducted a site visit and identified six outstanding commendations including leadership, effective planning, excellent curriculum committees, state-of-the-art facilities, library services and robust faculty development. The school expects full accreditation.



*Peter Syapin, Ph.D., pharmacology and neuroscience (above)
Research students in Paula Grammas Ph.D., lab (left)*



RESEARCH

Contribution of Bacterial Biofilms to Non-healing Diabetic Wounds

This research effort examines how bacterial biofilms, or communities of bacteria that reside in a tough protective shell, may contribute to the severity and antibacterial resistance of diabetic wounds. Methods for disrupting these bacterial biofilms may result in successful therapies.

Directors: *Kendra Rumbaugh, Ph.D.*, surgery, cell biology and biochemistry
806-743-2460, ext. 264
kendra.rumbaugh@ttuhsc.edu

John Griswold, M.D., surgery
806-743-1615
john.griswold@ttuhsc.edu

Abdul Hamood, Ph.D., microbiology and immunology
806-743-1707
abdul.hamood@ttuhsc.edu



West Texas Influenza Research Center

This center studies influenza treatments including the use of oral interferon as a preventative and therapeutic agent.

Contact: *Steven Berk, M.D.*, infectious diseases
806-743-3000
steven.berk@ttuhsc.edu



In fiscal year 2008, the School of Medicine provided \$78 million in charity care to 88,000 patients.

Kendra Rumbaugh, Ph.D., surgery and cell biology and biochemistry (above) Aruna Jahoor, graduate student, cell biology and biochemistry received the S. Edward Sulkin Award for best oral presentation by a graduate student at the annual meeting of the Texas Branch of the American Society for Microbiology. (bottom) Poster presentation during Student Research Week (right)

RESEARCH



Green Tea Polyphenol (GTP) and Tai Chi for Bone Health: a Pilot Study

The long-term goal for this project is to develop a complementary and alternative medicine strategy featuring a dietary supplement and a mind-body exercise for alleviating bone loss in postmenopausal women with low bone mass. The primary mechanism involves monitoring the effects of green tea polyphenol and Tai Chi exercise on bone mass in women.

Principal Investigator: *Chwan-Li (Leslie) Shen, Ph.D.*, pathology
806-743-2815
leslie.shen@ttuhsc.edu



Amarillo Faculty Clinical Research Unit

This program provides assistance for clinical faculty conducting basic science research. Staff have been instrumental in gathering knowledge and identifying research subjects while planning collaborative research initiatives. More than 50 research projects are in various stages of completion.

Contact: *Tom Hale, Ph.D.*, pediatrics
806-354-5529
thomas.hale@ttuhsc.edu

Center for Diabetes and Related Metabolic Disorders, Permian Basin

Comprising specialty clinics and education facilities housed at the Permian Basin campus, this center is focused on combating the rise in diabetes among West Texans. Faculty work closely with certified diabetes educators to accomplish community research, outreach and education.

Contact: *Craig Spellman, Ph.D., D.O.*, internal medicine
432-335-5250
craig.spellman@ttuhsc.edu



Every year, approximately 3,000 students apply to the School of Medicine of which 90 percent are from Texas. Most applicants will earn undergraduate degrees in biological sciences.

*Leslie Shen, Ph.D., pathology (above)
Research building Amarillo (bottom)
Thomas Hale, M.D., pediatrics –
Amarillo (left)*



COMMUNITY

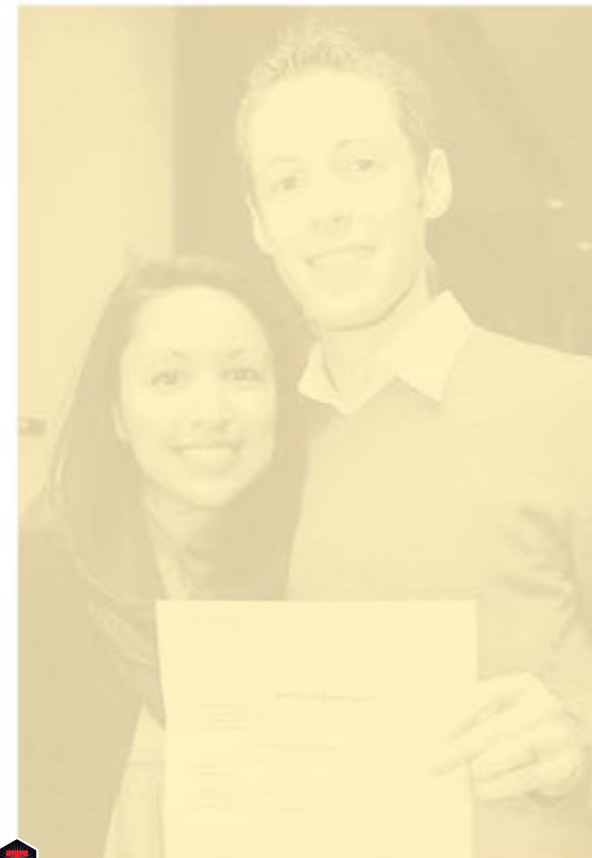
As one of 18 community-based medical schools in the United States, the TTUHSC School of Medicine maintains a strong historical tie to the institutions and people of the community. The complexity and increasing cost of health care coupled with the increasing number of uninsured patients have created a new health care environment that requires new solutions.

Across the country, medical schools such as ours play a leading role in defining community-based solutions to health care problems. Local physicians have always been a part of the educational program at TTUHSC; however, efforts are underway to expand our educational team through the appointment of more community physicians to our faculty. These educational partners provide real-world experience in their private practices to students, residents and fellows. An added benefit is a stronger medical community throughout the region.

A medical school brings important values to the community:

- Academic medicine often brings with it medical specialists not generally found in primarily rural areas like West Texas.
- Many physicians who are trained here choose to remain in the region.
- Medical schools care for many indigent patients in the community.
- Texas Tech Physicians in Amarillo, Lubbock, Permian Basin and El Paso provide nearly 200,000 indigent patient visits and more than \$40 million in uncompensated charity care per year.

Finally, the School of Medicine is leading the way to new community collaborations. By developing joint efforts within the community to encourage health care institutions and business owners to work together, we can provide the best possible care to those we serve.



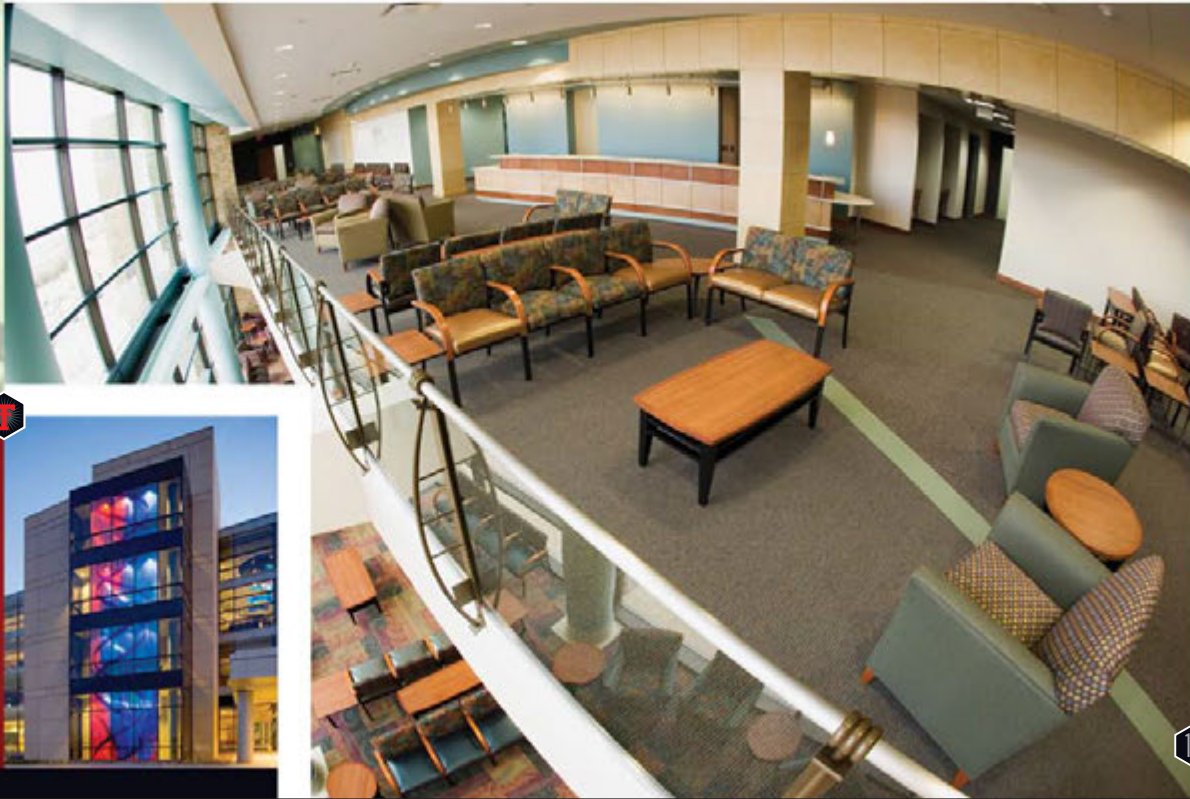
More than 500 community-based physicians partner with School of Medicine faculty to further student education through real-world experience in private practices.

*Craig Spellman, Ph.D./D.O.,
internal medicine – Odessa (above)
Doug Klepper, M.D.,
SOM alumni and community-based
mentor in Lubbock (bottom)
Graduating medical students
at Match Day (right)*



PATIENT CARE

Texas Tech Physicians is the faculty medical practice of the School of Medicine, comprising more than 450 physicians on four campuses: Amarillo, Lubbock, Permian Basin and El Paso. More than 650,000 patient visits occur in the practice every year. Emphasis on patient and employee satisfaction is strengthening with the goal of developing a model practice on each campus. Working closely with physicians in the community, Texas Tech Physicians strives to provide the most effective doctor network possible for the patients of West Texas. More than \$260 million per year is generated in practice plan revenue and hospital support.



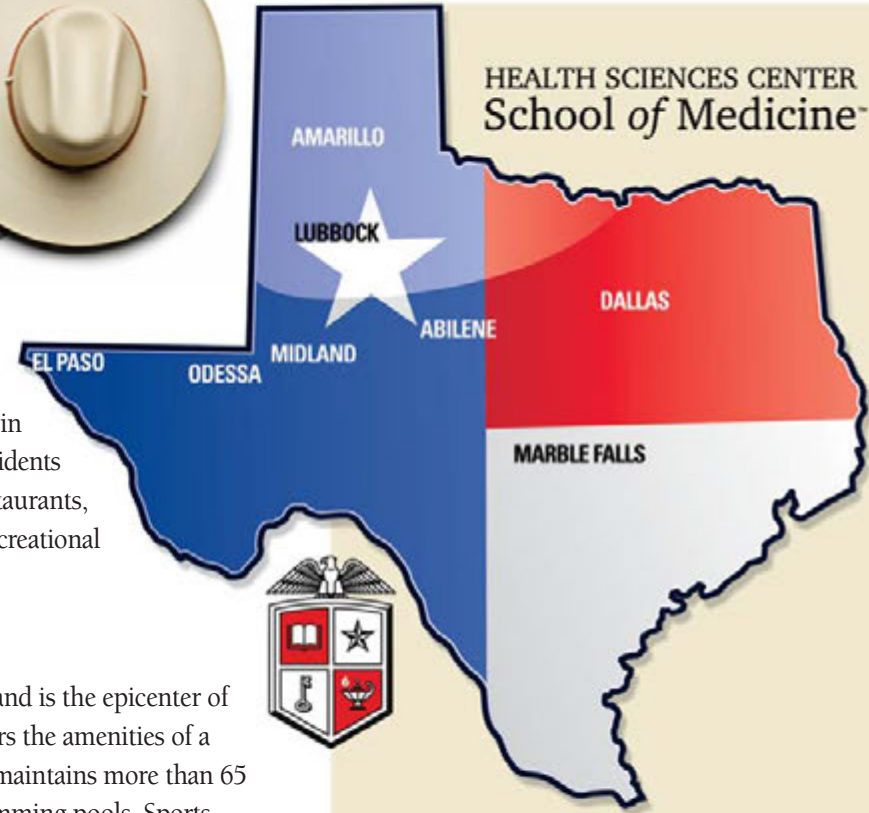
The School of Medicine programs serve as the base for clinical education for medical students and resident, the base for clinical research and as a major source of care for citizens of West Texas. In fiscal year 2008, the school provided 630,000 clinical visits to 230,434 patients.

*Michael Phy, D.O.,
internal medicine (above)
Pavilion exterior; Pavilion waiting
area, Lubbock, Texas (bottom)
TTUHSC Permian Basin (left)*



WEST TEXAS

This rugged, semi-arid region comprising 108 counties and 109,679 square miles covers much of the western half of the state. The people of West Texas have a long history of doing whatever it takes to succeed under adverse conditions and are often described as the friendliest folks around. The School of Medicine is based in three major metropolitan areas: Amarillo, Lubbock and the Permian Basin, which includes Odessa and Midland.



Amarillo

The city of Amarillo is at the center of the Texas Panhandle. With more than 180,000 residents, Amarillo offers all the conveniences of big city living in a friendly and small town atmosphere. The Amarillo area has much to offer residents and tourists alike being on the old Route 66 highway. A wide variety of restaurants, excellent museums, nearby Palo Duro Canyon and many other year-round recreational activities are available.

Lubbock

Located on the Southern High Plains, Lubbock is the state's 11th largest city and is the epicenter of a 26-county region. Growing into a city of more than 211,000, Lubbock offers the amenities of a major city while maintaining its West Texas charm and hospitality. The city maintains more than 65 public parks as well as public and private golf courses, tennis courts and swimming pools. Sports enthusiasts enjoy Big 12 conference play through Texas Tech University and nationally ranked softball, baseball and basketball at Lubbock Christian University.

Permian Basin

Two major cities in the heart of the Permian Basin are Odessa and Midland. With a combined population of more than 190,000 people, both communities offer a moderate cost of living, a thriving economy and quality of life that includes excellent educational, cultural and health care facilities.



A study by the Association of American Medical Colleges showed that every \$1 spent by a medical school results in a total impact of \$2.30 for the economy.

IN CLOSING



A drive along the country roads of 1960's West Texas yielded few city dwellings and conveniences. Endless carpets of verdant cotton fields under the watchful eyes of pump jack sentries guided travelers past cattle, family lands, windmills and the small towns and infrequent metropolitan areas of the day.

Many of these small towns and associated counties had no health care provider for hundreds of miles in any direction. Thousands of people had no recourse when medical emergencies arose or when the flu swept through the local school system. Seeing a physician meant travel to a major metropolitan area such as Lubbock, Amarillo, Midland, Odessa or El Paso.

Visionary members of the Texas legislature realized access to medical care for the thousands of Texans living in the South Plains, Permian Basin and far west Texas could only be acquired with more physicians practicing medicine in the area. So, with that vision and action of the legislature, this medical school became a reality in May of 1969.

Today's School of Medicine remains true to its original mission to train physicians for West Texas and has extended its purpose to include unlocking medical mysteries through world-class research and providing state-of-the-art health care to thousands of patients in west Texas and eastern New Mexico.

The drive through west Texas still yields counties with no medical providers. However, many of those original 1960s counties now have physicians, physician assistants, nurse practitioners and telemedicine opportunities. The School of Medicine has forever changed the medical landscape of the region.

One thing remains constant. Somewhere along the way, a physician-teacher touches the mind and heart of an eager medical student turned doctor. That touch is then extended to an anxious parent of a newborn, to a farmer receiving a life-altering diagnosis or a burn victim. The cycle is repeated every day, just as our original Texas leaders envisioned.



In the mid-20th century, the physician to resident patient in West Texas was 1:1300. Today, that ratio is 1:750. At the same time, the population of this area has increased by more than 30 percent.

"The Coordinating board envisions that the medical school under the administrative control of Texas Technological College will be an "innovative medical school..developed in partnership with the emerging medical center in Amarillo and with hospital authorities in Lubbock, Midland and Odessa."

— House Bill 498, creating the School of Medicine



Texas Tech University Health
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Spring, 2009

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