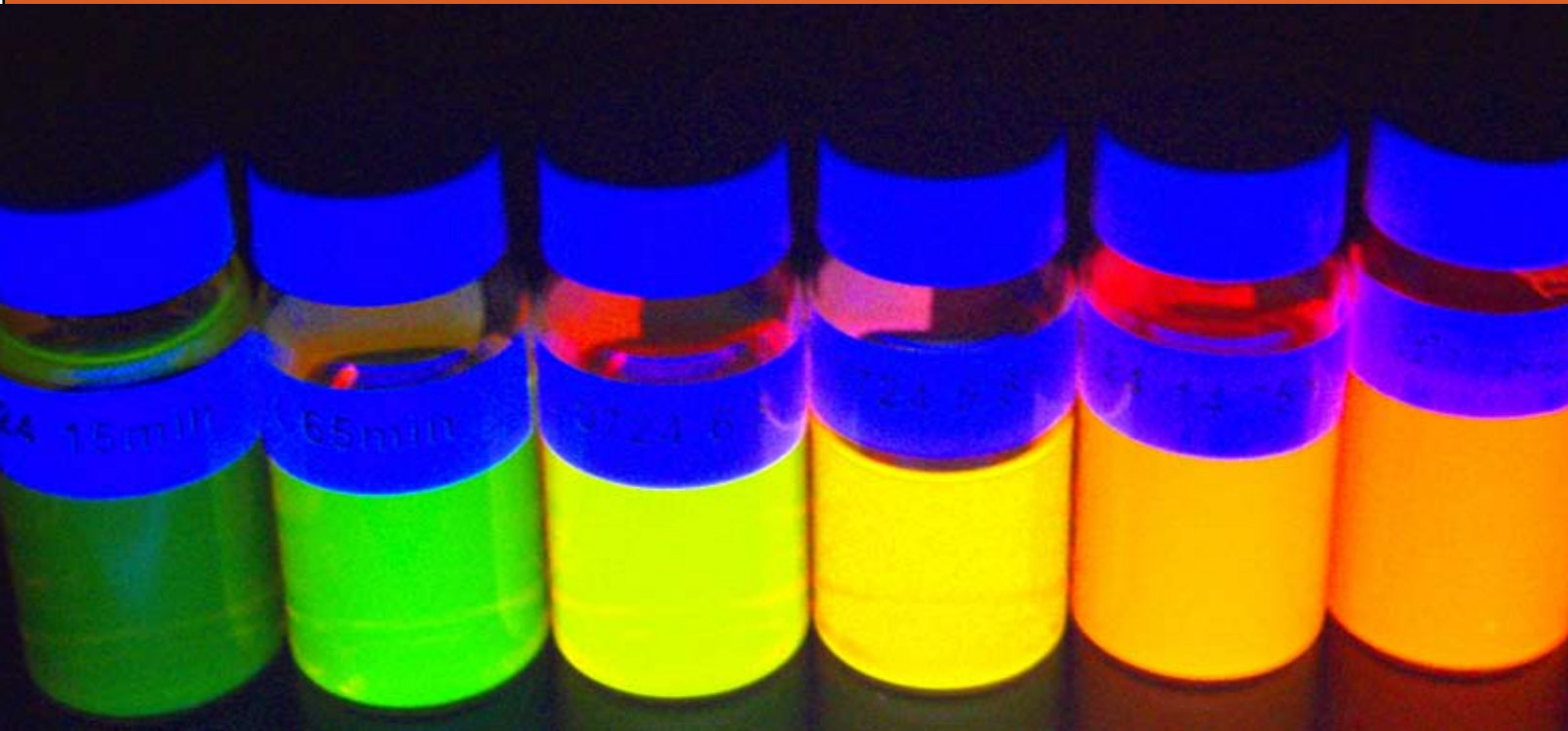


The University of Texas at Arlington College of Science

MAVERICK SCIENCE

Fall 2007



**Showcasing the College of Science's dedication to the
medical field through education**

Dean's Welcome



This has been another exciting year for the College. We have hired 11 new faculty with top-notch credentials, have gained funding for many new search grants, admitted some more excellent undergraduate and graduate students, graduated more than ___ undergraduate and ___ graduate students, and have begun the planning for a science component of a new engineering

and science research building. I have been very fortunate to be a Dean during a very exciting time in the history of the College. We have made significant progress in building a top tier college. A top tier college has great faculty, great students and excellent facilities. We have a good measure of all of these but are continually striving to get better. We plan to continue hiring some of the top faculty in the country to enhance the educational and research profile of this University. We will continue to recruit bright undergraduate and graduate students who seek exciting careers in science related professions, and we will continue to seek funds to enhance the research and teaching facilities of the college. We cannot attract top scientists and students without first-rate facilities. We will also continue to seek your help in enhancing our ability

A handwritten signature in black ink that reads "Paul Paulus". The signature is fluid and cursive.

Paul Paulus
Dean, College of Science
UT Arlington

to meet our many teaching and research missions. As a graduate or friend of the college, we hope you will feel some reflected pride in our continual prog

ress to becoming one of the top colleges of science in the southwest. To continue on that path, we need your support. Top colleges and universities have significant financial support for their alumni and friends. Only about a third of our funding comes from the state, so were essentially two-thirds "private". So like any other private school, we need donations of scholarships for deserving students and donations to supplement the funding for the various educational and research activities of college. The University is commencing an effort to raise funds for named and endowed professorships. These are critical to attracting and keeping the kind of faculty who make this a great university. Thanks for all your support thus. I look forward to your continued support.

This issue highlights one aspect of the excellence of the College of Science. Many of our students have interests in medical careers. We have an excellent pre-med program led by Assistant Dean Ed Morton. In this issue we highlight the success of this program and some its alumni and present interviews with two key medical "personalities" who have a long history of support for the college. We also showcase some of the exciting medically related research ongoing in the college. We hope you will enjoy this "snapshot" of one part of our college.

MAVERICK SCIENCE

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The University of Texas at Arlington is an equal opportunity/affirmative action employer.

Another New Building On Campus For Science

Following on the heels on the new Chemistry and Physics Building, the College of Science (COS) gets another facility for cutting-edge research. The five-story Engineering and Science Research building will be "L" shaped, with the longest wing running east to west, and occupying much of the land north of Nedderman Hall and the Engineering Lab Building. This land currently contains the Engineering Annex, the Shady Park and Border Train apartments, and the faculty and GRA offices in the temporary buildings in Faculty Lot 13. The long wing will cross the current Yates Street, which will be turned into a pedestrian mall. A two-story tunnel will run through this wing, permitting north-south travel from UTA Boulevard into the campus. Trees near the Shady Park apartments will be saved and this area will form a small park in the elbow of the building. The building will cost in the neighborhood of \$110 million, with \$80 coming through COE funding and \$30 from the COS. Construction should begin in the summer of 2008, with substantial completion expected by fall 2010.

The building will contain approximately 220,000 square feet of research and teaching laboratories and office space with about 60,000 square feet allocated to Science. Most of the space utilized by the College of Engineering (COE) will be for the Bioengineering and Computer Science & Engineering Departments. A planning committee has been established by Dean Paulus consisting of Drs. Krishnan Rajeshwar, Perry Fuchs, Suresh Sharma and Andre Pires da Silva to assess what type of laboratory infrastructure and support facilities would be needed to house the Science faculty in this new building. It is anticipated that faculty in this College whose research interests are conducive to collaborative projects involving the Engineering faculty would be prime candidates to occupy this research space. On the other hand this fine new facility would also offer significant recruiting advantages for future hires in the College.



South Elevation



North Elevation

College & Biotech Industry Interactions

The College is continually seeking potential fruitful interactions between the College and industry in the Dallas-Fort Worth area. There are a large number of large and small companies in this area that are involved in science related activities. The highly trained faculty and students in the College of Science are great source of expertise and potential employees. Some of our faculty members are involved in research and consulting activities with these types of companies and many students have been employed by them. Recently, the College has initiated some more intensive interactions with several top biotech companies in Fort Worth. We have made several visits to Alcon to discuss the development of a symposium series on topics of common interest, meetings of their scientists with the College faculty, and internship and employment opportunities

for our undergraduate and graduate students. Alcon focuses on eye care products and is the largest biotech firm in the Dallas-Fort Worth area. We have had similar visits with DFB Pharmaceuticals to discuss common areas of research and the development of a Center for Wound Healing. The major focus of DFB Pharmaceuticals is on products that enhance wound healing. We anticipate that our interactions with these two companies will bear significant fruit and look forward to developing similar relationships with other scientifically oriented companies. If you know of some companies that might be a good fit for interactions with the College, please let us know.

Collaborations between University of Texas campuses

Thirteen interdisciplinary research teams of faculty from UT Arlington, UT Southwestern Medical Center and UT Dallas have received grants totaling about \$1.3 million to pursue collaborative projects, combining expertise from the three area University of Texas campuses in biomedical science, engineering and physical sciences on projects aimed at solving real-world medical problems.

Each team includes faculty from either UT Arlington or UT Dallas and UT Southwestern. Funding for the projects comes from state and philanthropic sources. Teams receive up to \$100,000 for their respective projects, which program leaders say will allow the researchers to attract additional external funding from conventional sources, such as federal agencies.

"These projects have the potential to have enormous impact on the science and practice of medicine," said Dr. Alfred Gilman, Executive Vice President for Academic Affairs, Provost and Dean of UT Southwestern Medical School. "This program is another step forward in expanding collaborations among the UT institutions in the Metroplex and exploring the interdisciplinary topics that are driving advances in medical care."

UT Arlington and UT Southwestern Medical School jointly submitted 45 projects for consideration and a panel of 11 officials representing both institutions reviewed the submissions. Seven were chosen for funding.

"These are immensely promising projects," said Dr. Ron Elsenbaumer, Vice President for Research at UT Arlington. "They will create new approaches to managing pain, heart disease and cancer. The social benefit is simply immeasurable."

Funded projects involving faculty from the College of Science are:

- "*Neuropathic pain mechanisms in myelination disorders*" – Dr. Perry Fuchs, Associate Professor of Pathology at UTA, and Dr. Qing Lu, Assistant Professor of Developmental Biology at UT Southwestern. This project examines new approaches to the prevention and treatment of pain in multiple sclerosis patients.
- "*Adjustment to lung cancer*" – Dr. Angela Liegey Dougall, Assistant Professor of Psychology at UTA, and Dr. Joan Schiller, Professor of Internal Medicine at UT Southwestern. This study examines the links between depression and other negative emotions felt by patients with lung cancer and their treatment outcomes.
- "*Genetic, molecular and neurological bases of sexual discrimination in Drosophila*" – Dr. Pawel Michalak, Assistant Professor of Biology at UTA, and Dr. Dean Smith, Associate Professor of Pharmacology at UT Southwestern. This project focuses on understanding how genes influence sexuality and mating preference.
- "*DNA methyltransferases in neuronal signaling and resulting behavioral output*" – Dr. Lisa Monteggia, Assistant Professor of Psychiatry at UT Southwestern, and Dr. Linda Perrotti, Senior Research Scientist in Psychology at UTA. This study investigates how changes in DNA expression can result in behavioral alterations mimicking debilitating diseases such as schizophrenia and autism spectrum disorder.

Leadership Giving

Reviewing the roster of College of Science donors, it is not surprising to find the names of many COS alumni. Among those faithful supporters, a special few stand out for going “the extra mile” for the college, like Dr. Dale Martin. In addition to the leadership he provides as Vice Chair of the COS Advisory Council, Dr. Martin represents the college on the UT Arlington Alumni Association Board. He addresses graduates on behalf of the Alumni Association several times each year at COS commencement ceremonies, and has often served as an “unofficial” legislative advocate in Austin when issues affecting the university are being considered.

When asked about his continuing loyalty to UT Arlington almost thirty years after graduation, Martin recounts an interesting story with a few unexpected detours. By the age of thirteen, he knew that he wanted to be a pediatric dentist, an attorney, or a psychiatrist. He has successfully achieved the first two goals, but in deference to his wife Julia, he set aside any thoughts of an additional degree in psychiatry in the interest of matrimonial harmony. Martin attended classes at UTA from 1974 through 1978, graduating with not only a B.S. in Chemistry, but with four minors: Mathematics, German, Physics, and Biology. His successful completion of this rigorous academic discipline may account for his success on the Dental Aptitude Test, on which he scored in the top 1/10th of one percent of applicants nationally in the science portion. Some were surprised that he made it to graduation; after all, he and a classmate survived an infamous 1975 incident that shut down Science Hall, filling the corridors with toxic fumes. It was noticed that a bottle of lithium aluminum hydride had burst in a lab storage cabinet. Attempting to follow the instructions of a post-doctoral lab assistant who asked them to move it into another container, the students knew they would need respirators to protect their lungs from the growing particulate cloud that resulted from manipulating the material. Returning to the lab with a respirator, they were greeted by the orange glow of a fire billowing out of the lab cabinet. Martin stepped into the room and grabbed the extinguisher from the wall. He quickly learned that CO₂ reacts with the hydride to create a back draft of burning methane gas. Repeated blasts eventually brought the fire under control by freezing the reaction, but not until the resulting smoke and fumes filled the corridors (and the department Chairman’s office next door!) Possessing the natural curiosity of most aspiring scientists, this episode only heightened Martin’s appreciation for the wonders of chemistry.

After his 1978 graduation, Martin attended the University of Texas Dental Branch in Houston and Baylor College of Dentistry, where he specialized in pediatric dentistry. He began a private pediatric dental practice in Hurst, but by 1991 he had become increasingly frustrated with OSHA requirements and the financial impact they had on smaller dental offices. He decided to pursue a law degree at SMU while maintaining a part-time dental practice so that he could advocate for changes in the legal system from within the system. His time with the Social Security Administration and the Indian Health Service in the Department of Health and Human

Services’ Office of General Counsel were eye-opening experiences, but during the years since he first decided to pursue a legal career, many of the changes he had hoped to see in the OSHA system came about through a general softening of the agency’s position on many issues. He returned to full time pediatric dentistry in 1999.

Martin had maintained an active relationship with UT Arlington until the mid-1980’s, when he was infuriated by what he felt was the “deliberate ruination of the football program.” He vowed to have no future involvement on campus and continued his personal boycott for over ten years.

What brought him back to campus and transformed him into one of the most visible and supportive COS alumni? His wife Julia is a registered nurse at Arlington Memorial Hospital and, in the late 1990’s, one of her co-workers happened to be the wife of former Dean of Science Neal Smatresk, who began sharing updates on new initiatives and progress in the college under his leadership. Never underestimate the power of two very determined women. Martin not only returned to campus, he took on many active roles and became a financial supporter, as well. The Martin family has funded several chairs in the new Planetarium, including the most recent to honor son Robert’s achievement of the Eagle Scout award in the spring of 2007.

“Having the opportunity to support the Planetarium in its early stages was cool,” Martin said. “It was a great way to connect with my teenage son, and we have truly enjoyed being founding members.”

More significantly, the Martin legacy has been passed to the next generation, as son Robert is enrolled for the fall 2007 semester as a freshman biology major in the pre-medical program. When asked about his change of heart, Martin says simply “The College of Science is finding new ways to meet student needs. They are growing under the leadership of Dean Paulus, and they have the vision to make new things possible. When you find someone who’s actually doing that instead of just talking about it, you hitch up your wagon and say “Let’s roll!”



Another very generous donor to the College of Science is Dr. Franklyn Alexander, but his story is much different. Dr. Alexander has established an endowed scholarship fund to benefit health professions students, with

the stipulation that all recipients must come from small towns. Why this unusual requirement? When Alexander graduated from high school in Baird, Texas, population 1,500, he went from a graduating class of 26 straight into his first class at UT Austin – a class of 650 students. A microbiology major, he survived and eventually thrived academically, but his undergraduate years were not without challenges.

“Small town kids need help to succeed in college,” says Alexander. “They don’t have the opportunities the kids from larger schools have.” He graduated from UT Austin and later from Baylor College of Dentistry. His wife, Jane Mayfield Alexander, is a Texas Tech graduate, but when it came time for the newlyweds to settle down and establish a dental practice, they returned to her hometown of Arlington. Not only did the fledgling practice grow and flourish, but Arlington offered the Alexanders many opportunities for community involvement.

When asked to join the UT Arlington Development Board several years ago, Alexander says that saying “yes” was one of the best decisions he ever made. “I have enjoyed getting to know the local university from the inside out, and when we wanted to give something back to the Arlington community, UT Arlington was the logical place to do that. Arlington needs a strong university, and this university can do so much for Arlington. Science has been my lifelong passion. Science is critical, and anything I can do to help educate students in science is meaningful to me.”

Through his generosity, future classes of pre-professional students can share that same passion, and realize their own dreams of a future in medicine or dentistry.

Invest in the future of your College of Science!

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Contact Shelly Frank, Director of Development, to learn how you can make an impact on the College of Science. (817) 272-1497

Send to: Shelly Frank, Office of Development, Box 19198, 701 South Nedderman, Rm. 421, Arlington, TX 76019-0198

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In the past twenty-five years, the UT Arlington College of Science has launched hundreds of students into the ranks of medical and dental schools across the country. Although complete data is unavailable for earlier years, conservative estimates combined with verifiable statistics indicate that well over 1,000 pre-medical students and several hundred pre-dental students have entered the ranks of medical professionals since the early 1980's, in addition to those pursuing other health-related occupations. The stories of their educational and career paths vary widely. Some came to campus as traditional freshmen, others at non-traditional ages ranging from pre-teen to mid-sixties. The common denominator in these success stories is the guidance they received under the careful supervision of Edward Morton.

When Morton arrived at UT Arlington in 1983 to assume full-time duties as the COS Health Professions Advisor, he brought a wealth of experience from his years at Indiana University. Although many titles have been added to his job description over the past twenty-five years, including Assistant Dean of Science for Student Affairs, Commencement Committee chairman, chairman of the Grade Appeals Committee, and most recently, Coordinator of the Joint Admission Medical Program, advising has always been his highest priority.

Prior to the creation of the full-time advising position, most pre-professional students in the College of Science were guided by Dr. Frank Gladden, a microbiology professor who voluntarily assumed those duties in addition to his teaching responsibilities. The increased availability of advising services allowed the program to grow and expand in new directions during Morton's time on campus, and when asked to reflect on changes he has seen in those years, he is quick to point out that today's student body is increasingly diverse. Unlike the student body of mostly resident Texans he served in the early 1980's, today's campus is home to a much greater number of international students. Many pre-professional students are immigrants or first-generation Americans who have overcome tremendous hardships to achieve their dream of a higher education. The resilience shown by many of these students provides Morton with excellent material for their letters of recommendation. He says many do "amazingly well," in spite of the challenge of learning English in addition to the standard pre-medical curriculum.

When asked the reasons for the demonstrated success of the program under his leadership, Morton claims no personal credit, although most of his students would argue that point. Instead, he cites the quality of education delivered by UT Arlington faculty, coupled with the high level of preparedness enjoyed by students who participate fully in the suggested pre-professional activities. As professional school admissions grow more competitive, preparedness becomes even more important, and is often the determining

factor in admissions decisions.

One of the most significant sources of support for professional school hopefuls is the Health Professions Advisory Committee (HPAC.) Twenty faculty and staff members from disciplines across campus serve as volunteer interviewers for the many students applying to medical and dental schools each year. Schools expect to see this official "stamp of approval" from a student's undergraduate institution, and committee members volunteer countless hours to interview their assigned students and prepare detailed recommendations highlighting their strengths. Long-term committee members such as Dr. Bob Neill and Dr. Tim Henry of the Biology faculty have lost track of the number of students they have assisted over the years.

Another standard that sets these applicants apart is their commitment to volunteer service, which Morton strongly endorses. From local hospitals to charity clinics, COS pre-professional students serve in capacities ranging from emergency room scribe to bilingual translator, not only gaining valuable experience but often making a difference in the quality of care delivered. Students also volunteer at the Regional Health Fair, a collaborative event held at UT Southwestern and hosted jointly by UT Arlington, UT Dallas, and Southern Methodist University. This annual event provides students the opportunity to make key connections with professional school recruiters in a more relaxed setting than an actual interview.

Involvement in the Medical Dental Preparatory Association is another recommended step in the preparation process, and former students mention its importance in their success almost as often as they mention Morton's guidance. Darrell Steele came to UT Arlington in 1982 as a traditional freshman majoring in biology, although that became microbiology with a minor in chemistry before graduation. He was the second president in the history of MDPA, serving in 1985-86. Those were very active years for the organization, the largest non-Greek student group on campus at that time. He recounts some of their projects: "We were a fund raising machine. We sold coffee and donuts in the Life Sciences building daily at 7:00 a.m., and sponsored an MCAT/DAT review course. This was clearly over our heads as a student-led group, but we worked hard and did our best. We used some of those funds to buy a camera tripod to honor Dr. Frank Gladden when he retired, possibly the best possible use of that money ever. He was an incredible professor." He also credits the success of their fundraising efforts to the support of chemistry professor Dr. Bob Francis, who taught the organic chemistry section and gave credibility to the fledgling review classes.

Steele participated in several of the tours of Texas medical and dental schools organized by Edward Morton, and feels the contacts he made on those trips were vital to his acceptance to Baylor Col-

lege of Dentistry in 1987. "My UTA education was critical to my success at Baylor. Most of my classmates were from larger, better known universities, but UTA students are historically among the top graduates at Baylor." He discovered his passion for oral surgery during those years. Says Steele, "I am big-picture oriented, and oral surgery is a big-picture type of specialty. Oral surgeons are the link between medicine and dentistry. For example, we are able to understand the diagnosis and treatment of diabetes, as well as its affect on oral health." He now enjoys a successful oral surgery practice in Coppell, Texas with his wife Linda, who is a pediatric dentist. "I am forever grateful to UT Arlington, Ed Morton and my friends from UTA for helping me fulfill my dreams."

Another former MDPA member who arrived on campus as a traditional freshman was Stephen Walter, who began his academic career as a physics major in 1986. He didn't make the switch to biology or the pre-medical program until his third year. Suddenly the 3.0 average that seemed so impressive in physics, math and engineering classes was below expectations. Walter relied heavily on Ed Morton and MDPA for guidance as he worked hard to raise his GPA. His observations about his experience as a first-generation college student are insightful. "Students that go into medicine with a family legacy already know the rules of the game. They know the system - what it takes to get in and what it takes to make it. Going through the system blind is to your detriment, but MDPA did a good job guiding me, and provided me a valuable framework to understand the rules of the game. Through MDPA events I learned to interact appropriately with medical professionals. Ed's support was also critical. He is a gem for UTA students." Walter also mentions the caliber of faculty as a key to his success. "My professors were such a valuable resource. Dr. Jonathan Campbell really stands out. He ran a ruthless class in Comparative Vertebrate Anatomy, but I gained a huge volume of information that served me very well."

Walter attended UT San Antonio Medical School, and graduated in the top half of his class. After a five year residency in pathology at Baylor University Medical Center in Dallas and a fellowship in hematopathology at Scott & White in Temple, he bought Red River Valley Pathology Laboratory in Paris, Texas in 2004. Why pathology? As a newly married resident, he considered the quality of life afforded by various specialties and opted out of those that required him to be on call frequently. He appreciates the lifestyle afforded by his own practice even more since adding three children to the family. His takes great pride in his growing staff of twelve, and considers them "family", as well.

In addition to the challenges posed by the curriculum, some students face additional barriers, such as age. During Morton's tenure, he has worked with students ranging in age from 12 to 64; in fact, one was the oldest person ever admitted to a U.S. medical school. One of the youngest was Jocelyn Zee, who began freshman coursework at the age of 13. Her age was a well-kept secret, known only by Morton and his staff until she was elected president of the Science Constituency Council at age 15, and began to earn well deserved notice of her exceptional abilities. She also served

as MDPA webmaster, was active in the Biology Society, and helped establish the Microbiology Society. Faculty members who stand out in her memory include Dr. Michelle Badon in microbiology, Dr. Greg Hale in organic chemistry (now Assistant Dean for Science Education) and biology professor Dr. Tom Chrzanowski.

"Serving as an undergraduate teaching assistant and supplemental instruction leader for Dr. Chrzanowski really helped me. In addition to giving me teaching skills, the experience made me a better learner." Zee also credits Morton and the staff in the Dean of Science office for their support and encouragement, and says simply "They cared so much about me and my success. I didn't want to disappoint them." She has yet to disappoint any of her mentors. As a fourth year medical student at the UNT Health Sciences Center in Fort Worth, she is preparing for board exams, but still finds time to serve as historian of her class. She looks forward to opening a local practice in family or internal medicine after completion of her training.

Entering college as a child is certainly challenging, but so is tackling a pre-medical curriculum while having children. Jane Wigginton received a Finance and Management degree from Baylor in 1982, but seven years and two children later, she began to feel that business was not her true calling. She had often thought of a career in medicine, but realized it might not be practical to pursue that dream. When she shared her secret passion for medicine with husband Bill, she found him enthusiastic and supportive, and gives him much of the credit for her success. Operating a family business allowed Bill the flexibility to assume a large portion of childrearing duties, and Wigginton began post-baccalaureate pre-med classes in 1989 with his wholehearted endorsement.

Her grades at Baylor had reflected her lack of interest in the business field, but she came in very focused and determined to succeed, with the goal of attending UT Southwestern Medical School. Wigginton remembers "UTA was highly recommended to me by faculty at UT Southwestern. I initially chose the program because of their endorsement, even though I lived only four blocks from SMU. I stayed and succeeded because of Ed Morton and the faculty. The classes were very rigorous, but they were so well taught and so enjoyable. My enthusiasm grew with each class."

Another child was born before she entered medical school, but she did achieve her goal of attending UT Southwestern. Two more followed during her time there, and the sixth arrived after she completed her medical training. When asked why she chose emergency medicine as a specialty, Wigginton says wryly "I have six children. Normally things are calmer in the ER than they are at my house." She goes on to explain that she had difficulty narrowing her focus to one area of medicine. "I loved each rotation and it was tough to choose. I enjoyed working with my hands, and emergency medicine was very hands on. It also afforded a lot of variety - it's never the same day twice in the ER. Patients present a wide variety of complaints, so I get to work in many areas without having to choose just one."

Now an Assistant Professor at UT Southwestern, she is still active in teaching and attends in the ER, but her selection three years ago as one of twelve inaugural Clinical Research Scholars takes most of her time and energy. She realized during her years as Chief Resident of Emergency Medicine that there were many unanswered questions remaining in medicine, and research holds the key to those answers. Speaking specifically of her most recent project, Wigginton says "We are developing new ways to treat patients who require acute resuscitation due to brain injury, stroke or cardiac arrest. This research is cutting edge; it may actually change the way medicine is practiced around the world." Her work is definitely attracting attention; she recently presented her findings to the White House medical staff. She has come a long way from the frazzled parent with mediocre grades who once sat in Ed Morton's office, determined to succeed against all odds. "Had it not been for Ed, my dream would not have been realized. He was almost like a computer processor, continuously but quietly working for us in the background, behind the scenes, helping us make the right choices."

As Morton prepares for his eventual retirement, he is looking to the future and taking advantage of new opportunities to help students succeed. One new program is the Joint Admission to Medical

School Program (JAMP), which Morton coordinates. Designed to aid economically challenged students who otherwise meet the criteria for medical school, this state funded scholarship will assist one or two students from UT Arlington annually. UT Arlington's first JAMP program participants, Ashley Wolodzko and Kit Truong, will enter medical school this fall. Morton anticipates success for both, and looks forward to sending the maximum number of students each year as the program grows.

When asked about the greatest challenge facing his students today, he quickly responds "Undergraduate tuition increases. There are so few scholarships available to these students, who are already facing the possibility of massive student debt from eight years of medical school." If the experience of past students is any indication, Morton will continue to do what he does so well until his well-deserved retirement date is reached, but the effects of his efforts will reach many future generations through the collective commitment to healing shared by students of past, present and future classes.

Basic scientific research is vitally important for medical progress, and UT Arlington COS faculty are conducting important research in areas such as cancer, pain, infectious disease, medical imaging, and a wide variety of other fields.

College researchers are particularly active in research on cancer, the second leading cause of death the U.S. In the Department of Chemistry and Biochemistry, researchers are investigating the mechanisms involved in resistance to chemotherapy and developing new approaches to cancer treatment.

Dr. Subhrangsu Mandal's research assesses the role of histone methylases in solid tumors and leukemia, and how their down-regulation can lead to new cancer therapy. Dr. Jongyun Heo's work on how redox-active proteins lead to deregulated growth control also provides new avenues for development of anti-cancer drugs. In collaboration with Drs. Mandal and Richard Timmons, Dr. Kevin Schug is developing new high-throughput analytical methodologies for discovering new peptide therapeutics for cancer treatment. Dr. Mandal is studying the role of histone methylation in cardiovascular disease, with a recent grant from the American Heart Association to study estrogen hormones and high density lipoprotein (HDL) levels.

In the Department of Physics, Dr. Wei Chen is developing luminescent nanoparticles with attached photosensitizers for photodynamic treatment of cancer. Dr. Ping Liu's work (with Drs. Timmons and Liping Tang) on magnetic nanoparticles for localized drug delivery is applicable to a variety of medical conditions as well as cancer. In the Department of Biology, Dr. Michael Roner is investigating the anti-tumor activity of reovirus, an oncolytic dRNA virus.

Two researchers from the University of Pittsburgh Cancer Institute joined the Department of Psychology this past year: Dr. Andrew Baum, who was Deputy Director at UPCI, and Dr. Angela Dougall. Dr. Dougall studies the psychological factors involved in coping with lung cancer, and Dr. Baum is investigating pathways by which stress affects tumor growth and mutagenicity, focusing on damage and repair of nuclear material inside cells. Dr. Baum also studies the psychological impact of gene testing for breast cancer risk assessment and has developed and is testing a series of psychotherapeutic programs designed to help cancer patients cope with their illness.

COS psychologists are also conducting several other lines of research with important biomedical implications. Dr. Robert Gatchel's laboratory and Dr. Perry Fuch's laboratory study pain from different perspectives. Dr. Gatchel's work translates what we know about pain and about cognitive behavioral therapy to treatment of pain, with special interest in chronic pain. Dr. Fuchs is more interested in the biobehavioral foundations of pain, focusing on underlying central and peripheral nervous system mechanisms. Dr. Yuan Bo

Peng is studying dorsal root reflexes in peripheral inflammation and pain in autoimmune encephalomyelitis.

Scientists in our Department of Biology are also working to further medical advances. In addition to his work on the antitumor activity of reovirus, Dr. Roner recently found that an extract from the Chilean soapbark tree inhibits viral attachment to host cells, a discovery with important implications for HIV disease. He is currently testing extracts in rotavirus-induced diarrhea. Dr. Christopher O'Brien is working on a new treatment for HIV disease that blocks HIV-1 viral assemble. Our growing faculty in the genomics area are also advancing the frontiers of medical science. Dr. Cedric Feschotte and his group are considering DNA transposons, or "jumping genes", and their relationship to genome instability and human disease.

COS faculty are also collaborating with researchers in the School of Engineering. Drs. Jianzhong Su and Hua Shan of the Department of Mathematics are working with Dr. Hanli Liu in Bioengineering on a 3-D tomographic reconstruction algorithm for brain imaging using models for brain tumors and cerebral ischemia. Another mathematician, Dr. Gaik Ambartsoumanian, is also working in the area of tomography on mathematical problems of ultrasonic imaging. Dr. Timmons is working with Engineering collaborators on designing and building nanoporous membranes for blood oxygenation and on using nanotechnology to improve implant biocompatibility.

Many diseases may be caused or exacerbated by environmental factors, and COS researchers are assessing the role of such factors. Dr. Sandy Dasgupta, chairman of Chemistry and Biochemistry, has a long-standing research program evaluating perchlorate levels in water and the relationship to thyroid deficiencies. He has recently expanded his research to include perchlorate in breast milk. Dr. Laura Mydlarz in the Department of Biology is studying infectious disease outbreaks in corals, and how they are influenced by environmental stressors such as temperature.

This fall, the College of Science is welcoming several new faculty members who will expand our already considerable portfolio of biomedically-related research. Dr. Shan Sun-Mitchell is leaving his position as a biostatistician with the U.S. Food and Drug Administration to join the Department of Mathematics. Dr. Heidi Harriman Ewen, a new member of the Psychology Department, will continue her research on biophysical and psychosocial stress in elderly populations. Dr. Andrew Hunt comes to the Department of Earth and Environmental Sciences and will pursue his research interests in the health effects of air and water pollution, solid waste disposal, and housing.

The College of Science has generated an impressive body of biomedical research over the past years, and expects the contributions of our faculty to grow exponentially over the coming decade.

COLLEGE OF SCIENCE~
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AT ARLINGTON

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