Spring 2003

the university of texas at austin

CHEMICAL Compositions

chemistry & biochemistry
departmental newsletter

"Explosion" in Welch Hall!

Upneet Bhatia and Kevin Chan, student workers, assist students using the Welch Computer Labs.

Now that I have gotten your attention, let me assure you that there is nothing to be alarmed about. This *"explosion"* has nothing to do with pyrotechnics, but simply refers to the rapid increase of Internet use and information flow throughout Welch Hall. Jim Holcombe suggested that I describe how things have changed regarding Information Technology within our department. I feel too young to write a "reminiscences" article, but one does not have to be too senior a colleague to realize that a revolution, or at least a rapid evolution, has transformed the way we carry out our teaching, research and administrative functions within the department, at least in terms of information flow. In 1995 when I became chair of the department, I was surprised to discover that I did not have e-mail capability from the chairman's office. When I wanted to send an e-mail to someone, I had to walk back upstairs to my faculty office to send the e-mail. At that time the building had "Welch Net" - a couple of bridged Ethernet cables weaving their way through parts of Welch Hall in an attempt to connect the theorists, crystallographers and other heavy computer users to the "main frame" and the outside world. The "net" would go down frequently, often when some faculty member would attempt to attach their own vampire bite on the cable and attach the connections too close together - not so good.

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IN THIS ISSUE

FROM THE CHAIRMAN

Jim Holcombe

Texas, like many states, is facing financially tough times. As a state institution, The University of Texas at Austin gets to "share" the burden in the legislative attempts to balance the budget. As a part of the University, the department also gets to "participate" in this activity. The good news is that President Faulkner and the University are determined to insure that the quality of the programs for undergraduate and graduate students is minimally impacted. This "silver lining" extends even further. The overall goal of the University to increase the number of faculty, thereby improving the student-teacher ratio, remains a top priority. As a consequence, the department's aggressive search for outstanding new faculty for the 2003 academic year remains on track. We have just completed a grueling but exciting interview process for these new faculty members, having interviewed more than 20 outstanding candidates. The rate at which we were bringing them to the department gave me some concern that someone might get injured if they collided in the halls with a fellow candidate. Having talked with each prospective faculty, I can assure you that extremely bright, creative scientists are still being produced, and their zest for taking on the demands of teaching and research is high.

On behalf of the department I must also take this time to thank those individuals and companies who have made donations to the department. They have permitted us to provide scholarships and fellowships for undergraduate and graduate students as well as assist in the recruiting of top students and faculty for the department in these uncertain times. While the financial strains placed on many companies have undoubtedly impacted their ability to contribute, most recognize that the pipeline must be maintained for the inevitable upturn; and they have continued with their support in spite of, I'm certain, the need to stretch budget lines to assist us. The individual donations are equally impressive since we are all aware of the natural inclination to retract financially when uncertain times appear. Enough of this financial "news"... you get enough at work or in your daily paper, and I *certainly* get enough whenever I cross the street to visit the Dean. Let me tell you about some "neat stuff."

We have more undergraduates than ever before involved in independent research both in our department and in the plethora of summer research programs offered across the U.S. In our department, a majority of our faculty takes on at least one undergraduate student in their laboratories during the course of the year. This is significant since it is almost expected that an entering graduate student will have some undergraduate research experience. In our current graduate program we have a bright, energetic group of 255 students, and grant support for these students and their research in the department is as strong as it has ever been.

The record undergraduate admissions this past fall combined with an increase in science majors who need chemistry as part of their degree plans caused enrollment to balloon in our lower division general and organic chemistry courses. If I didn't know better, I would believe that someplace we'd finally unleashed the Carl Sagan of chemistry/biochemistry on the population, and everyone now wants to be a chemist. (More realistically, I think many would-be computer scientists are concerned about the dot-com debacle and shifted to other areas of science... most of which require chemistry!) For those of you who attended UT, you'd be interested to know that freshman and organic chemistry labs are being taught from 9:00 a.m. to 10:00 p.m. five days per week. To no one's surprise, Friday night labs are sparsely populated. Interestingly, we were just a keystroke away from inserting Saturday labs when we were forecasting enrollment at the start of the semester.

More "neat stuff"... Our department was selected by the Carnegie Foundation as one of 32 Partner Departments in the U.S. (and 1 of only 7 chemistry departments) to participate in the Carnegie Initiative on the Doctorate where the objective is to look at the paradigm of graduate education to see if changes can be made that better prepare our advance degreed students for academia, industry and government science positions. **Jennifer Brodbelt** heads up a group of seven departmental faculty who will explore enhancements to an already strong graduate program.

Remember my last tutorial on "institutes" and "operational research units" (ORUs), which are not departments but focal points for faculty across the University who share common research interests? These organizational units are a unique feature of UT Austin and serve as intellectual, idea-generating mixing pots - scientific "think-and-action tanks," in a manner of speaking. Well, one of these ORUs, The Center for Nano- and Molecular Science and Technology (**Paul Barbara**, director), will be receiving $1.5-2M for equipment as part of a "Strategic Partnership for Research in Nanotechnology" grant totaling $6M. UT Austin, UT Dallas, Rice and the U.S. Air Force are partners in this endeavor. Additionally, "Nano at the Border," a

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partnership between UT Brownsville, UT Pan American, UT Austin, UT Dallas, and UT Arlington, was also announced recently. The objective of this program is to share human and facility resources in this active area of science. New materials, new applications and new means of characterizing these particles briefly describe the theme of the CNM. For those of us who have difficulty visualizing items "bigger than a barn or smaller than a pin head": it would take about 10 billion of the 10 nanometer diameter particles to cover the head of a pin. (I still haven't seen any figures on how many angels could dance there, but I guess that's another part of the detection problem that has yet to be resolved.)

It was just announced that two of our young faculty (**Mike Krische** and **David Vanden Bout**) received Sloan Research Fellowships. This prestigious award had only 20 recipients across the U.S., and our department received two of those! To highlight the teacher-scholar quality of faculty that now reside in Welch Hall, both of these creative fellows have also appeared in past newsletters as recipients of outstanding teaching awards.

"I lost my horse" (UT Chairman's Training Camp)

Inside, you'll read about **Rick Russell** (p. 7), the latest addition to our faculty. Just before starting his academic career, he and his wife, Pilar (a biochemist), rode their bikes across the U.S. After reading about their trip, my pulse raced as I recalled my bike hanging from the ceiling in my garage (with two tires that had gone flat from neglect and age-rotted rubber) and considered just such a feat. This hallucination soon passed.

The prowess of the faculty and the department is a reflection of the quality of the students that reside here. More than 70 undergraduates received scholarships this year for their academic achievements, including Michael Hoffman, recent recipient of the prestigious Marshall Fellowship that will permit him to study at Cambridge next year (see p.13).

As you would expect, the lights continue to burn well into the night in Welch Hall; however, the library is less filled than days gone by. This is due to the ever-expanding availability of on-line journals that allow one to sit in the comfort of one's home/lab/office to browse and read. On the front page, **Marv Hackert** details how the department has continued to enhance its computational capabilities. We're not talking about supercomputers for the theorists. We're talking access and support for everyone. For those of you who have not visited the department in the last few years, you'd find it interesting that you can retrieve class notes from the Web while sitting in the hallway of Welch using your wireless connection on your laptop. Such a wireless connection will soon be available in the Mallet Library also. While I marvel at these advancements, I still have a little trouble envisioning myself reading a journal article on the screen of a cell phone. But I'm sure that this is just a reflection of my limited imagination and aversion to fine print.

In spite of strained budgets, the quality and dedication of faculty, staff and students in the department remain at an enviably high level. Personal character garners success—filled coffers only make the path a little less bumpy.

I reluctantly close with a note of sadness. **Tom Morgan**, a member of the department since 1947, passed away this past July (p. 9). While Tom is missed deeply, I think that his gentle nature and high regard for the students, the department and the University will linger as a strong reminder of the impact that one individual can make in a world populated by so many.

— James A. Holcombe
Professor and Chairman

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Well - things have changed. We started by designing a building-wide, distributive network where every office, classroom and laboratory in the building could be served by Internet ports with dedicated wiring that could be routed from a series of wiring closets around the building. The first plan called for about 250 active ports, but that number quickly climbed to a thousand. Today the department's network has grown tremendously, keeping pace with the increasing demands of the department. The networking infrastructure consists of 100 Mbit connectivity throughout the building with approximately 1,250 network ports. The entire building has been configured for DHCP (Dynamic Host Configuration Protocol) - an Internet protocol for automating the configuration of computers that use TCP/IP. Users can connect their computer to any jack in the building and have network connectivity without the need for manual re-configuration. In addition, *wireless network access* is being implemented in various strategic and high-traffic areas such as the main hallways and outside the lecture halls. The goal is to provide network connectivity to students, faculty, and staff anywhere in the building.

Network Analyst, Jason Dendy, in one of five Welch Hall wiring closets

User facilities have also been added. The Welch Computer Labs were designed to be next to the new chairman's office in a high traffic area for easy access for students. The labs currently consist of 38 PCs and 23 Macintosh computers. The labs are available for use by students, staff, and faculty of the department. In addition to the standard productivity software, specialized software such as Mathematica, Labview, MultiSim, ChemSketch, RasMol, and various others are available. The labs are slated for a complete hardware upgrade this summer.

As we were designing the new chairman's office on level two, plans were put in place to convert the old chairman's office into a combination Instructional Media Lab and offices for staff support, which started as a single, half-time staff slot and now has grown into a dedicated IT support staff of six. The group's expertise includes PC/Mac, systems analysis and design, Unix administration, Web development, lab support, networking and security. Many of the support staff are skilled in multiple areas and are therefore able to provide comprehensive and responsive technical support. The Instructional Media Lab is a high-end lab for graduate students and faculty for use in preparing course materials, presentation materials, multimedia and Web development. It consists of four Macintosh computers, four PCs, a color laser printer, a large poster printer, and specialized equipment such as slide and film scanners. Specialized software is also available in the lab, including Photoshop, Illustrator, Dreamweaver, Flash MX, Fireworks, Canvas, CorelDraw, Spartan, ChemDraw, and other packages. Teaching and presentation aids and equipment such as laptops, projectors, digital camera/camcorder, VCR, and televisions are available for check-out.

The departmental Web server is the primary conduit of information for both the general public as well as students. In addition to the department Web site, the server hosts various research group Web sites, as well as course Web sites for students. Today the server hosts over 69,000 Web pages and experiences an average of 169,050 hits per day! I mentioned earlier that in 1995 the department had no e-mail service. At present we have an e-mail server that serves 125 users and processes, on average, over 8,500 messages per week! With Internet connections and modern IT projector services available in all the larger classrooms in Welch Hall, many of our faculty are able to demonstrate concepts in the classroom using molecular graphics, animated clips, and Web resources that were unavailable for use just a few years ago. This is a wonderful resource not only for our students, but for the State of Texas and the world. I recall once when we got a call from a California school asking when our server was going to be back up because they relied on our Web site as an educational resource.

As great as all this sounds, various projects are being planned to improve the IT infrastructure and services within the department. Two examples include implementing centralized data storage services and IT access kiosks. Centralized storage will enable new means of data sharing, storing and safeguarding. As data storage needs continue to increase, Storage Area Networks (SANs) will be a logical expansion of the networking infrastructure. We plan to place IT access kiosks at strategic locations throughout the building. The aim is to increase the number of stations where common services such as e-mail, course Web sites, administrative and general information may be accessed around the building.

Another area where the electronic revolution has profoundly affected the way scientists work is in access to information. UT's General Libraries are leading the way in the ongoing transformation of scientific information from a print-based system to an online, digital system. Today's graduate student learns to search and access the scientific literature using tools that almost could not have been imagined just a decade ago in

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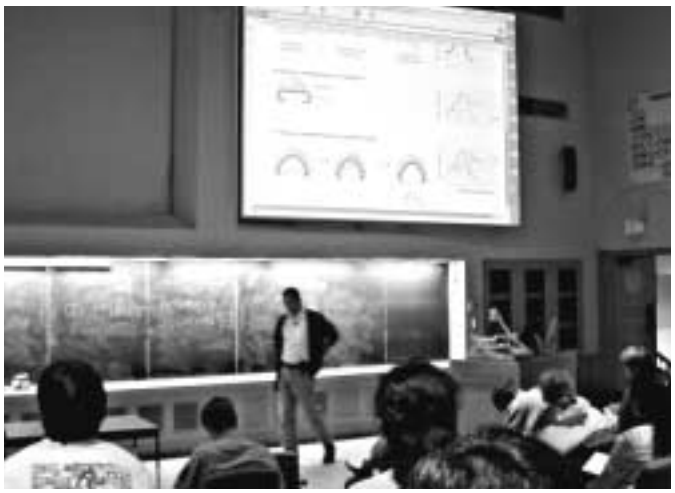
the "olden" days. Chemists once had to pour through volumes of Chemical Abstracts on the library shelves in order to identify papers of interest on a particular topic. Online searching, when available, was faster, but expensive and required advance planning. Today, Chemical Abstracts and other CAS files are available to all UT users through the SciFinder Scholar system. This allows a person to log in at any time, from any computer on campus, and conduct fast searches by keyword, author name, chemical structure and formula, registry number, patent number, etc., and then limit, sort, and analyze results in various ways. Our students and faculty have quickly adopted this new method of searching the literature. In 2001, the first full year of our SciFinder Scholar license, Austin users logged in 24,600 times and did 69,000 searches. In 2002, those numbers rose to 34,500 connections and 101,000 searches!

Access to journal articles has also changed. No longer does a student have to walk down to the library, locate the journal and then wait in line to make a photocopy. A major time-saving development is the ability to link directly from a Chemical Abstracts record in SciFinder (or via other online databases such as Medline) to the actual article on a publisher's Web site. A single mouse click brings the article to the researcher's computer screen in a few seconds, either in PDF format (mimicking the printed page) or in a more dynamic, hyper-linked HTML format. UT Austin users now have access to over 5,000 online full-text journals in all subjects, including nearly 500 in the chemical sciences. In 2002, Austin users downloaded over 91,000 articles from the American Chemical Society's 30-odd journals. That's about 250 articles per day, 365 days a year. This is probably more than five times the number that once were copied in the library during peak usage in the early 1990s. And the ACS is just one of a number of important publishers that we have access to. The number is growing steadily. While most journals have been available online only since the mid-1990s, some publishers are building historical backfiles. The American Chemical Society's Archives, containing full text of every ACS journal article ever published, back to 1879 - three million pages worth - was added to our subscription in the summer of 2002. Faculty and students who once amassed file cabinets full of photocopies now amass hard drives full of digital articles. (They still have to find time to read them, though!)



Prof. Jon Robertus illustrates enzyme catalysis to his biochemistry class using Web based materials in one of Welch Hall's ten multimedia classrooms.

Students utilize Mallet Library IT facilities

While students and researchers may not be coming into the physical library as much, usage of the Digital Library is *exploding* and shows no signs of slowing. Time once spent tracking down journal volumes and running a photocopier is now time spent reading, thinking, and doing research. It's also exciting to realize that we're still in the early stages of this revolution. Scientific information will rapidly become more interconnected, more dynamic, and more easily located.

Marv Hackert

Yes indeed, an *explosive* turn of events - from having to run upstairs to send an e-mail to sitting in my office using my PC to carry out a literature search, or writing this article coordinating facts with David Flaxbart in the Mallet Library and Viren Patel in Computing Services and Joyce in the chairman's office without having to leave my office. Did I forget to mention administrative computing and DEFINE? Oh well - that is another story in itself.

— Marv Hackert

Special thanks to Dr. Viren Patel, Manager - Computing Services, and David Flaxbart, Librarian - Mallet Library, for help with this article.

Welch Hall Metamorphosis


Rick Quy

The University of Texas at Austin is the largest university in the United States and one of the best. Commensurate with that, the Chemistry and Biochemistry Department is one of the largest and best in the nation as well. And we are growing. We are actively recruiting new faculty, attracting more of the best graduate students and post-docs, and acquiring funding for new research. In addition, our undergraduate teaching load continues to climb rapidly as we train new chemistry and biochemistry majors and provide service courses to virtually every other department on campus.

But to be the biggest and best requires a lot of "stuff" and a lot of space to put it in. And usually the space can't be just generic square footage. Many of the labs and work spaces in Welch Hall must be highly specialized to provide the right ventilation, temperature, humidity, or cleanliness. In short, Welch Hall has to provide state of the art space for all the work that goes on in a large, prestigious chemistry and biochemistry department.

Now I know what you're thinking: Welch Hall and "state of the art" in the same sentence is an oxymoron. Well, hold on there! Things are changing. There are a number of projects underway to help bring Welch Hall into the 21st century.

In February, the University formally began a lengthy process to examine Welch Hall with the aim of making it state of the art for the next decade or two. There is still a lot of work to be done, but the ball is rolling. The first step is to engage a first-class engineering or architectural firm to pore over the building and tell us what needs to be done and how best to accomplish it. The final report will provide a vision of what we need to look like in, say, the year 2020.

But that's not all. The contract also calls for interim reports telling us what needs to be done in the short term to address shortcomings that are already making it difficult to house new faculty, begin new research programs, and teach in the most advantageous ways. Our hope is that some of these immediate needs can be addressed...well, immediately.

In fact there are some projects now underway that anticipate what we expect the formal study will tell us. The first is a major renovation of organic research laboratories for the Grant Willson group. Dr. Willson has designed laboratories that incorporate 10-foot fume hoods and other innovations to provide exciting new opportunities for his students. The size and spatial arrangement of this lab, together with recently remodeled fifth floor space for Drs. Krische and Pagenkopf, called for immediate upgrading of the ventilation system. Accordingly, some sixth floor space (formerly used by biology) has been converted into a mechanical penthouse for a new 30,000 cubic foot per minute air conditioner to provide the additional "make up" air for the fume hood demands of these laboratories.

Another high-visibility project that is underway is the resurfacing of the South Plaza (adjacent to Inner Campus Drive.) Rainwater leaks through this plaza have often caused water damage to the main general purpose auditorium (WEL 2.224) and have in fact delayed a major renovation of the auditorium. The plaza will have a larger drain system and new concrete surface to prevent future leaks.

As a side benefit, Welch will gain new "hardscape" amenities on the South Plaza. Hardscape is the term for new lighting, seating, shade arbors, and planters. The old planters contributed to the leaks because water sometimes passed through them into the building. Accordingly, irrigating pipes were turned off, and the planters became deserts.

The new planters will sit on top of the decking and cannot leak into the building. In addition, they will have built-in water reservoirs that are automatically refilled so that plants will not wither or die from lack of attention.

Though it is a mass of bare asphalt and waterproof membranes right now, we expect by June to have a beautiful new sun-splashed (but also shady) plaza for lunch, study, and relaxation by all department denizens and passers by.

As always, you are more than welcome to stop by Welch any time and see what's going on with your department, but be assured that big changes are in store.

— Rick Quy
Associate Director

New Faculty: Rick Russell

BA, Earlham College (1991); PhD, Johns Hopkins University (1997)

RNA structure formation and catalysis

"All enzymes are proteins." This sentence is likely foreign to today's biochemistry students, but as little as two decades ago it was considered part of the Central Dogma of Biology; DNA makes RNA, which then makes the only truly functional molecule, protein. We've since learned that RNA is also capable of enzymatic catalysis. In fact, RNA provides catalysis in the machinery of the Central Dogma itself, functioning in the enzyme complexes that process messenger RNAs and produce protein from them. Beyond this, many RNAs have functions in processes from protein trafficking, to RNA editing, to the maintenance of chromosome ends.

To perform these functions, RNA must be able to fold to a specific three-dimensional structure. This means that the primary sequence of the RNA has to specify a single structure, favoring it over all other possible structures, and the RNA has to be able to fold to that single structure rapidly enough to allow it to function. RNA may be thought of as "challenged" for both requirements; it only has four different residues, compared to protein's twenty, making it harder to specify a single structure. Further, local structure is stable for RNA, in contrast to protein, leading to the likelihood of forming long-lived misfolded states for RNA when incorrect local structure is formed.

Rick Russell

So how does RNA do it? The answer is far from complete, but one thing that is clear is that many RNA's have enlisted proteins to help them form and maintain their active structures. My research interest is to understand, at the most fundamental level possible, the mechanisms and principles by which proteins influence the structures and structural properties of RNA. Do proteins that stabilize the functional state also interact with RNA folding intermediates, and if so do the proteins then guide folding of the RNA so that it avoids misfolded intermediates? Some proteins are thought to help by unfolding RNAs that are trapped in misfolded structures. How do these proteins recognize their target RNAs, and how do they go about unfolding them? In the long-term I plan to build on this basic understanding to explore the complex assembly and reaction pathways of RNA-protein machines, focusing on one of the most important and fascinating ones: the spliceosome, which is required in all eukaryotes to process messenger RNAs so that they can properly code for proteins.

I am convinced that the deepest understanding of these molecular processes will come from careful quantitative analysis using a range of different biochemical and biophysical approaches, as each approach will have particular strengths and limitations. One approach that has unique power, and that I plan to use extensively, is fluorescence studies performed at the level of single molecules. The single molecule approach is so powerful because complex molecular processes invariably have many intermediates along multiple pathways. Understanding the nature of intermediates and the reaction steps between them is critical to understanding any molecular process, but much of this complexity is typically lost due to the averaging that is intrinsic to conventional "bulk" approaches. In contrast, the essence of single molecule observation is that averaging over a population of molecules is not needed, so that in principle the full set of intermediate states for each molecule can be defined.

At those times when I'm not in the lab or office you might see me cruising around campus in running shorts. I began running about twelve years ago while in college and have made it an important part of my life since then. I also enjoy traveling by bicycle; in fact before starting at UT my wife, Pilar, and I spent the summer cycling from Washington DC to San Francisco. The trip really was a great experience and gave me an increased appreciation of the spectacular places and the many different kinds of people that make up our country.

Faculty Awards and Honors

ERIC ANSLYN ~ received an **Award for Outstanding Teaching in the Graduate Studies** from UT Austin Office of Graduate Studies.

FATIMA FAKHREDDINE ~ is one of the winners of a **2003 Texas Excellence Teaching Award**. The **Texas Exes** allows students to choose the recipients of this award.

Marv Hackert (left) represented the department at the awards ceremony honoring Fatima Fakhreddine (right).

MARVIN HACKERT ~ chaired the US delegation to the **International Union for Crystallography General Assembly and Congress** held in Geneva. He was also elected as a new member of the **IUCr Commission on Macromolecules**.

MICHAEL KRISCHE ~ was selected as one of three **2002 Eli Lilly Grantees**. He received the award for work performed by his group in the area of catalytic stereoselective carbon-carbon bond formation. Mike also received a **Sloan Research Fellowship** from the **Alfred P. Sloan Foundation**.

EDWARD MARCOTTE ~ received a **David and Lucile Packard Foundation Fellowship in Science and Engineering**.

PETER ROSSKY ~ was appointed to the **Marvin K. Collie-Welch Regents Chair in Chemistry**.

JOHN STANTON ~ was the **Kapuy Lecturer** at **Eotvos Lorand University** in Budapest and the **Robert S. Mulliken Memorial Lecturer** at the **University of Georgia.** His promotion to **Professor** was approved.

DAVID VANDEN BOUT ~ received a **Sloan Research Fellowship** from the **Alfred P. Sloan Foundation**, and his promotion to **Associate Professor** was approved.

GRANT WILLSON ~ was awarded the **Photopolymer Science and Technology Award** in recognition of distinguished contributions in photopolymer science by the **Technical Association of Photopolymers, Japan**.

Leon Owen "Tom" Morgan, 1919-2002

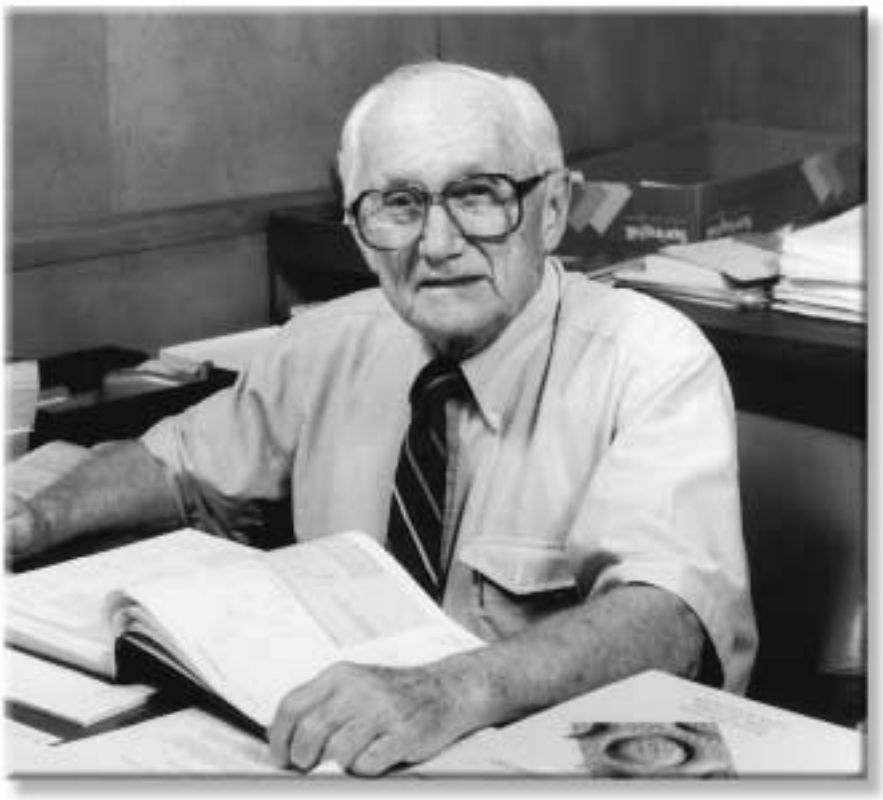
Dr. Leon O. (Tom) Morgan, Professor Emeritus of Chemistry, died July 29, 2002. Dr. Morgan was born in Oklahoma on October 25, 1919. He graduated from Classen High School in 1937 and received a B.A. in Chemistry from Oklahoma City University, graduating summa cum laude in 1941. Dr. Morgan completed an M.A. in Chemistry from UT Austin in 1942, and received a Ph.D. in 1947 from the University of California, Berkeley. He was a member of Sigma Xi Honor Society in chemistry.

In 1942, Tom Morgan married Mary Elizabeth (Betty) Boyd. They met while both were graduate students at UT Austin. Dr. Morgan worked on the Manhattan Project in Chicago in 1943. There, he was a member of a research team that successfully isolated and identified elements 95 (americium) and 96 (curium), and he was credited as a co-discoverer of americium.

In 1947, Dr. Morgan joined the chemistry faculty of The University of Texas at Austin, where he taught until retirement in 1993. At UT Austin, he initiated a program in nuclear and radiochemistry, primarily of the elements tungsten, rhenium, and osmium, and of electrochemical processes. During the early fifties the interests of his research students shifted to magnetic resonance relaxation as a tool for investigation of structural and dynamical properties of complex solution species. A theory of electron-nuclear interactions leading to enhanced spin relaxation, the Solomon-Bloembergen-Morgan (SBM) theory, was developed. That is the basis for much of the image enhancement in current magnetic resonance imaging. Dr. Morgan also researched solutions of complex transition metal species, with an emphasis on those of biological interest.

He was Director of Freshman Chemistry in the department for many years, and he supervised the research of numerous graduate students in chemistry, many of whom have gone on to distinguished careers. He considered teaching 40,000 students his most important achievement.

During his career, Dr. Morgan chaired the Graduate Assembly, 1978-80, and served as Graduate Advisor in Chemistry, 1975-78. He had consulting association with colleagues at the Los Alamos National Laboratory for many years.



Dr. Leon "Tom" Morgan

Tom Morgan was an avid supporter of UT athletics and recreational sports for both men and women. He was chairman of the University's Intercollegiate Athletics Council for Men, 1979-87, and served as a member of the Council from 1968-72 and again from 1988-89. Following his retirement from teaching, he served as President of the UT Austin Retired Faculty-Staff Association and as Chairman of the Advisory Committee to the UT Austin Faculty Center.

Dr. Morgan is survived by his wife, Betty; son, Joseph C. Morgan; daughter-in-law, Patricia Conradt; son, Dr. A. Boyd Morgan, and wife, Sherry; son, Dr. Robert O. Morgan and wife, Dr. Kara Kern; daughter, Mary Kay Morgan Muir, and son-in-law, Donald W. Muir Jr.; and grandchildren, Libby Morgan, Tracy Morgan Davis, Sharon Morgan, Rob Morgan, Alissa Muir, and David Muir.

Contributions may be made in Tom Morgan's memory to the Leon O. Morgan Fellowship, Department of Chemistry and Biochemistry, Chairman's Office, The University of Texas at Austin, 1 University Station A5300, Austin, TX 78712-0165.

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Thomas J. Martin presents Rick Quy with a contribution from Sasol North America for the department.

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R.B. Lewis, B.B.A. (1941)

R.B. Lewis passed away on Friday, January 24, 2003. He was 82. Mr. Lewis and his wife, Margaret Lewis, have been generous contributors to education. Together they established the R.B. and Margaret Lewis Endowed Presidential Fellowship in Biochemistry to provide support for biochemistry graduate students.

R.B. Lewis

R.B. Lewis founded and was the CEO of Austin Mortgage and Trust Company and the R.B. Lewis Insurance Agency before he retired in 1980. He is survived by his wife of 52 years, Margaret; son Dr. Edward Lewis and wife Janet; daughter, Carolyn Gallagher and husband Tom; and four grandchildren.

Southwest Regional ACS Meeting

Jim Boggs

The Central Texas ACS Section acted as host for the 58th Southwest Regional Meeting from November 3 - 6 at the Hilton Austin North Hotel. UT faculty members and students participated very actively, both in the organization and in the scientific presentations.

Jennifer Brodbelt, as program chairman, organized 17 symposia consisting of 28 sessions and one workshop in addition to four general sessions. On Sunday afternoon the conference was devoted to a high school teachers' symposium and included the presentation of the Southwest High School Teacher's Award. The regular scientific program took place from Monday to Wednesday. Approximately 390 abstracts were submitted for the meeting.

Special events at the meeting included a daylong undergraduate research program organized by Myrrh Sagy from the UT Austin Student Affiliates group. An awards banquet celebrated a number of awards including the Southwest Regional Award to Jay Kochi of the University of Houston, the Southwest Regional Award for Contributions to Diversity to Nancy Magnusson from Texas A&M, the Southwest Regional Award in High School teaching to Chad Huckabee from Corpus Christi, the Industrial Innovation Award to a team from Pennzoil-Quaker State in the Woodlands.

A Salute to Excellence Award was presented at a special luncheon honoring Norman Hackerman. This is an ACS award to a person, place, or organization that is deemed to have made a truly exceptional contribution to chemistry and chemists. Larry Faulkner (UT Austin president), Bob Curl (Nobel Laureate from Rice), and Roger Elliott (former assistant commissioner for higher education who worked with Norm in setting up the TRP and TARP programs) spoke briefly on Norm's contributions to education in Texas. Dr. Elsa Reichmannis (president-elect of ACS) presented the award.

Co-general chairs of the meeting were Rick Quy and Jim Boggs, both from UT Austin, Department of Chemistry and Biochemistry.

—Jim Boggs
Professor Emeritus

University of Texas at Austin student awarded Marshall Scholarship

Michael Hoffman with his undergraduate research faculty mentors, Andy Ellington and Karen Browning

A student from The University of Texas at Austin has been awarded one of this year's prestigious Marshall Scholarships to study in Great Britain.

Michael M. Hoffman, an Austin native, is a biochemistry/Plan II Honors student. He is conducting research for a thesis in the biochemistry laboratory of Dr. Andrew Ellington at the university, and is president of the Texas Student Publications Board, which oversees *The Daily Texan*, KVRX Radio, KVR-TV and other student media groups.

"I'm really excited about studying at (the University of) Cambridge," Hoffman said. "I owe this award in large part to the excellent instruction and mentorship I have received from the faculty of the university. UT has provided me with a wealth of unique opportunities, such as the chance to do biochemistry research and participate in university policy-making."

The Marshall Scholarship, established by the British as a way of thanking the American people for the Marshall Plan, provides for two or three years of study at any institution of higher education in the United Kingdom. Up to 40 scholarships are awarded annually, allowing students to gain an understanding and appreciation of Britain.

Marshall scholars receive about $50,000 for their studies at the university of their choice. Hoffman will attend the University of Cambridge next fall, where he will pursue a doctor's degree in bioinformatics.

Chemistry and Biochemistry Authors' Scholarship

The department is pleased to announce establishment of a new endowment, income from which is being used to fund scholarships for undergraduates majoring in chemistry and biochemistry. The source of funds for this endowment is royalties earned on textbooks authored by faculty members in the department and purchased by students enrolled in our courses. Contributions to the endowment are entirely voluntary on the part of the authors.

Profs. Gilbert, Martin, and Roberts (now deceased) have been contributing regularly their share of royalties earned on sales of their laboratory textbook for organic chemistry at The University of Texas at Austin, and the corpus of the endowment is nearing $25,000 as a result. Their hope is that formal establishment of this endowment will encourage other departmental authors to "share the wealth" with our undergraduate students.

Department M.A. and Ph.D. Graduates

Ph.D., Fall 2001

Ryan Callahan (Lagow)
Ting Chen (Heller)
Julian M. Davis (Sessler)
Eve F. Fabrizio (Bard)
John D. Gorden (Cowley)
Raymond Jui-Pu Hung (Willson)
Jennifer D. Kreisberg (Magnus)
Matt A. Lasater (Laude)
Young Mi Lee (Bard)
Eric S. Okerberg (Shear)
Andrey Pereverzev (Prigogine/Stanton)
Sandra R. Whaley (Belcher)
Kim Fay Wong (Rossky)

M.A., Fall 2001

Ronald E. Seidel (Barbara)

Ph.D., Spring 2002

Laura A. Deschenes (Vanden Bout)
Maya Escobar (Martin)
Anne E. V. Gorden (Sessler)
Daniel R. Mitchell (Lagow)
Jennifer B. H. Sadow (Robertus)
Jamal C. Saeh (Stanton)
Dong Hee Son (Barbara)
Hoang Vi Tran (Willson)
Robert J. Wiacek (Cowley)
Cameron R. Youngstrom (Lagow)
Ji Yu (Barbara)
Rebecca S. Zimmerman (Sessler)

M.A., Spring 2002

Scott T. Iacono (Pagenkopf)
Laura K. Mayberry (Browning)
Mary Ann Mensi (Iverson)

Ph.D., Summer 2002

Michael D. Best (Anslyn)
Donna C. Lyon (Lagowski)
Daniel Seidel (Sessler)
James A. Shriver (Sessler)

M.A., Summer 2002

Brandy M. Gazo (Browning)
Brad J. Herrick (Lagowski)
Ana Liza Luis (Krische)
Kiley P. Miller (Belcher)
Shannon N. O'Neil (Anslyn)

News from the Mallet Library

Mallet@120

2003 will mark the 120th birthday of The University of Texas at Austin, and also of the Chemistry Department and the Mallet Chemistry Library, all of which were founded in 1883. To commemorate this milestone, the next issue of *Chemical Compositions* will contain an article on the history of the Chemistry Library from its origins to the present day. We already have an expanded library history web page (http://www.lib.utexas.edu/chem/history/mallethist.html), and a timeline exhibit will be unveiled outside the library.

David Flaxbart

In the meantime we'd like to ask our readers and alumni for any reminiscences they have about the Chemistry Library in particular, or their experiences with the changing world of chemical information in general. What was it like doing chemical literature searches in decades gone by? Who has recollections of visiting the un-air-conditioned library in the early morning hours to beat the summer heat? The joy of flipping through hundreds of typewritten catalog cards? The first time you had an online search done on an old teletype terminal? Searching for spectral data using drawers of punch cards and metal rods? So much has changed in chemical information over the last century or more, that everyone young and old marvels at how far we've come. Yet the changes may only be beginning.

We'd welcome your thoughts on the past or on the future, and if we get enough we'll publish some in next fall's issue. Send them by email to chem@lib.utexas.edu, or by standard mail to the Chemistry Library, UT Austin, 1 University Station A5300, Austin, TX 78712. We hope to hear from you.

Endowment News

The library expresses its grateful appreciation to all who sent in donations to the James and Ruth Ann Boggs Library Endowment this year, especially those who made memorial contributions in memory of Mrs. Boggs. The books purchased with these funds will be part of the library collection in perpetuity (we hope!), so it's a gift that truly lasts forever. It's also a gift that directly benefits future generations of students. Please consider making a donation to one of the library's endowment funds.

— David Flaxbart

Staff Retirements

Three long-time employees of the Department of Chemistry and Biochemistry retired from full-time employment, **Barbara McKnight, Margaret Rodgers,** and **Manuel Vargas**. Although all have "retired," they are still around the department on part-time schedules.

Barbara, graduate coordinator, came to the department 16 years ago. She previously worked in the College of Business and the Department of Educational Psychology. Her first position with Chemistry and Biochemistry was as Analytical Division secretary. Barbara remembers being hired by Dr. Stan Simonsen. Barbara is continuing to assist in the Graduate Office. Her able replacement is Richard Garcia.

Margaret, Biochemistry Division assistant, has been with UT Austin and the department for 25 years. She began as a research assistant in Dr. Boyd Hardesty's lab. After eleven years, she moved into administration in the Biochemistry Division. Margaret reports she found time to remodel her home and take a few trips, while she worked part-time in Dr. Grant Willson's office after her retirement. She is thoroughly enjoying having time to work out on a regular basis in the UT Recreational Sports facilities. Her replacement is Natalie Potts.

Manuel, electrical, mechanical, and technical supervisor in Instrument Design and Repair, came to the department 22 years ago after working three years at UT Applied Research Laboratories. Manuel has helped faculty and staff with every kind of equipment imaginable (and some unimaginable) from lab apparatus to coffee pots. IDR is an authorized service center for Apple. He will be helping out 19 hours/week. During his "free time" he is building a new home, fixing up his existing home, and enjoying his grandchildren. He says, "Retirement is fun."

Barbara McKnight, Jim Holcombe, Manuel Vargas, and Margaret Rodgers

Other more recent retirees from the department are **Bob Lewandowski** and **Barbara Bachman**.

Bob Lewandowski

Bob started working at the University in 1969 as a glassblower. He went on to create scientific glassware at UT Health Science Center in San Antonio, West Virginia University, North Texas State University, and Sandia National Laboratories before returning to Austin to run the department's glass shop in 1991. He was awarded a departmental Exemplary Service Award in 2001. Bob will continue blowing glass at home, where he has a fully outfitted glass shop.

Barbara Bachman began working in the Chemistry and Biochemistry Department in 1991. Before that, she had stints in the Division of Recreational Sports and Central Receiving. Barbara has been the accounts payable department for Chemistry and Biochemistry ever since. She was awarded a President's Staff Excellence Award in 2000 for her outstanding and tireless service to the University.

Barbara Bachman

Alumni Retorts

1957

Franklin R. Leach, Ph.D. (Reed) ~ retired from Oklahoma State University, Department of Biochemistry and Molecular Biology, in 1998. He joined OSU faculty in 1959. Leach authored two online biochemistry courses for University of Health Sciences Antigua Medical School.

1967

Robert O. Bost, B.S. 1965, M.A. (Pettit), Ph.D. (Organic/Physical Chemistry) University of Houston 1970 ~ has joined the faculty of the chemistry department at the University of Central Oklahoma as associate professor of chemistry and director of the master of science in Forensic Sciences Program. Dr. Bost welcomes contact from faculty and fellow students from UT, as well as inquiries from students interested in graduate training in the forensic sciences (rbost@ucok.edu).

1968

James Barborak, B.S. (Chemistry) 1963, Ph.D. (Pettit) ~ retired from the University of North Carolina-Greensboro, Department of Chemistry and Biochemistry.

1971

Philip DeShong, B.S. (Chemistry), Sc.D. Massachusetts Institute of Technology 1976 ~ is chairman of the Department of Chemistry and Biochemistry, The University of Maryland.

1979

Charles T. Campbell, B.S. Chemical Engineering 1975, Ph.D. (White) ~ received the 2001 ACS Award in Surface Chemistry sponsored by Procter & Gamble Company. Campbell was honored for his fundamental contributions to projects such as a catalyst to extract vehicle pollutants without preheating and a device to study reactions on surfaces step by step. He is co-director of the Center for Nanotechnology and professor of chemistry at The University of Washington.

Donna J. Nelson, Ph.D. (Dewar) ~ Iota Sigma Pi vice president and associate professor of chemistry and biochemistry at the University of Oklahoma, presented a poster on the society at the spring ACS national meeting.

1988

Terence Kelly, Ph.D. (Gilbert) ~ is director of medicinal chemistry at Boehringer Ingelheim Ridgefield, Conn.

1990

Roy D. Dennington II, Ph.D. (Dewar) ~ is vice president of research and development of Semichem, a company established to promote and expand the semiempirical methods pioneered and developed by Michael J.S. Dewar.

1993

Christopher Eddleman, B.A. (Biochemistry), Ph.D. 1999 ~ is a medical student at Texas Tech University School of Medicine in Amarillo and has been matched for a residency position in neurological surgery at Northwestern University.

1994

Richard E. Thomas, M.A. (Iverson and Sessler) ~ was promoted to the rank of Commander, US Navy. Thomas assumed duties as Chief Staff Officer for Commander, Destroyer Squadron Two Four in June 2002. Currently deployed in support of Operation Enduring Freedom, he embarked on USS Spruance deployed to the Mediterranean.

...Continued on next page

...Continued from page 16

1996

Robert Dielman Culp, Ph.D. (Cowley) ~ reports he is "having a grand time fusing the worlds of chemistry and chemical engineering with Shell chemicals in Houston." He spends half-time in the lab developing new iron based catalysts for making styrene and half-time traveling the world providing engineering technical service for Shell's catalyst manufacturing plant and customers using their catalysts. He has a wife, Kerrie, and 3 daughters, ages 6 months to 5 years.

1999

Darrell Spells, Ph.D. (Gilbert) ~ is an assistant professor at the University of North Carolina-Greensboro, Department of Chemistry and Biochemistry.

2000

Jeffrey Almrud, Ph.D. (Hackert) ~ joined the faculty as an assistant professor at Angelo State University.

2002

Jennifer Sadow, Ph.D. (Robertus) ~ is teaching at Schreiner University in Kerrville, Texas.

Postdoctoral Fellows

Andrew Holder (Dewar) ~ is an associate professor at the University of Missouri, Kansas City and president of Semichem (see Roy Dennington, 1990, above).

Department Alumna Authors Chapter For Reference Textbook

Diana L. Lundelius, B.A. Biochemistry 1978, has donated an author's commemorative copy of the new sixth edition of *Managing Hazardous Materials* to the Mallet Chemistry Library. Ms. Lundelius is the primary author of "Chapter 4: Chemical Analysis," a fundamental chapter in the reference textbook published by the Institute of Hazardous Materials Management. The textbook is used by professionals in the field of environmental health and safety, universities offering EHS-related courses of study, and by candidates preparing to take the exam to become Certified Hazardous Materials Managers (CHMM). Ms. Lundelius' professional career and her collegiate activities with the UT Department of Chemistry and Biochemistry were featured in the Fall 2001 *Chemical Compositions.*

Diana L. Lundelius and David A. Wilson, husband-wife team, received the ACHMM 2002 National Champion of Excellence Award.

Cowley students and postdocs assemble at Gordon Research Conference in Inorganic Chemistry

The 2002 Gordon Research Conference in Inorganic Chemistry was held in Newport, Rhode Island in late July 2002, and provided an opportunity for several members of the Cowley scientific family to get together and enjoy a good time. The chairman of this year's Gordon Conference was Prof. Richard A. Kemp (Ph.D., Cowley, 1982). Kemp currently holds dual positions as professor of chemistry at the University of New Mexico and as a principal member of the technical staff at Sandia National Laboratories in Albuquerque. In the main group section of the conference, Prof. Mike Lattman of Southern Methodist University (Postdoc, 1977-79) served as discussion leader. Two of the invited speakers in this section had definite Cowley ties, one being Prof. Alan Cowley of UT himself! Also in the same session was another invited speaker with Cowley ties - Prof. Francois Gabbai of Texas A&M University (Ph.D., 1994). Also in attendance at the conference were several former Cowley students and postdocs.

Shown in the photo are:
(back row) - Prof. Mike Lattman (SMU), Dr. John Leman (General Electric Corporate R&D - spent summer of 1987 as undergraduate researcher in Cowley's lab), Prof. Francois Gabbai (Texas A&M, Ph.D., 1994), and Prof. Rick Kemp (UNM/Sandia, Ph.D., 1982); (front row) Prof. Andy Barron (Rice University, Postdoc, 1986-87), Prof. Alan Cowley, Prof. Patty Wisian-Nielson (SMU, Ph.D., 1976), and Prof. Bob Neilson (TCU, Postdoc, 1974-75).

IN MEMORIAM

Gerald Aronowitz, B.S. (Memphis State), Ph.D. (Hackerman) 1963 ~ died September 14, 2002. He was 71. He worked as senior research chemist for Standard Oil Indiana and transferred to Tulsa, Okla. with AMOCO. Aronowitz is survived by his wife, Rose; five children and their families; two sisters; one brother; and two "four-legged kids."

Elaine Brigham, B.S. Microbiology (Texas A&M), M.S. Chemistry (University of Houston), Ph.D. (Mallouk) 1996, died January 4, 2003, at the age of 44. She was employed by Northrop Grumman Laser Systems at the time of her death. Survivors include her parents, Raymond and Virginia Brigham; sister, Barbara Reed; and two brothers, Ray Brigham and Dale Brigham.

Patrick Ward Campbell, B.S. (Chemistry) 1963, M.A. (Operations Management) University of Arkansas 1990, passed away October 10, 2002, at the age of 62. Patrick retired from Johnson & Johnson in 1991. After his retirement he worked for the Service Corps of Retired Executives. He was preceded in death by his wife, Jyme. Survivors include his mother, Bertie Campbell Wright; sons, John Campbell, Patrick Campbell, and Michael Campbell; sister, Karen Malone; step-brother, Sam Wright; five grandchildren, one great grandchild, and numerous nieces, nephews and in-laws.

IN MEMORIAM

Evin L. Cook, Ph.D. (Hackerman) 1949 ~ died November 20, 2002, at the age of 84. His career included oil refining and production research at Humble Oil Company, Pan American Refining, and 40 years with Mobil Corporation and retirement in 1988. Cook was an active member of the First Baptist Church Dallas. He is survived by wife, Lois, and daughter, Camille Price, as well as nieces and nephews.

John I. Hedges, Ph.D. (Parker) 1974 ~ died July 26, 2002, after suffering a heart attack while running in a park in Munich, Germany. He was 56. After working as a doctoral fellow at Carnegie Geophysical Laboratory in Washington, D.C., he accepted a position in 1976 as a researcher and professor at the University of Washington School of Oceanography. Dr. Hedges earned the Geochemical Society's Alfred R. Treibs Award in 2000 for his lifetime achievement in the field of organic geochemistry. In addition to his wife, Joyce, Dr. Hedges is survived by daughters, Angelique Edwards and Elizabeth Hedges; sisters, Sue Coonfare and Ruth Gearhiser; brother, Don Hedges; and two grandchildren.

Aubrey Lester McClellan, Jr., Ph.D. (Hackerman) 1949 ~ died at the age of 79 after a brief illness at his home in El Cerrito, Calif. on August 20, 2002. Aubrey is survived by his wife of 56 years, Virginia Breithaupt McClellan; two children, Catherine Russo and Ted McClellan; grandson, Jonah Parker McClellan; and brother, Joe Brown McClellan. McClellan worked as a research chemist at Chevron Research in Richmond, Calif. from 1951 until his retirement in 1985. His many hobbies and interests included genealogy; community theater; collecting books; prints and etchings of Venice, Italy; stamp collecting; and playing clarinet in a Dixieland band. He has authored several scientific books, including a high school chemistry text.

James E. McShane, B.S. (Chemistry) 1958, B.S. (Pharmacy) 1962 ~ passed away April 7, 2000 after a stroke. He was 63. McShane is survived by his wife, Wanda.

Richard W. Mosley, B.A. (Chemistry) 1954 ~ died October 26, 2001.

Hershel Beebe Prindle, Ph.D. (Henze) 1954 ~ died August 8, 2002. He was retired from Dow Chemical U.S.A.

Jerome (Jerry) Ravel, M.D. (The University of Texas Medical Branch at Galveston) 1940 ~ died January 30, 2003, at the age of 85. He was the husband of Dr. Joanne M. Ravel, professor emeritus. Together the Ravels established the Joanne M. Ravel Regents Endowed Fellowship in Biochemistry. Jerome Ravel and Joanne Macow were married in 1946. In 1947 they moved to Austin where he practiced internal medicine until his retirement in 1987. Jerry Ravel is survived by his wife, Joanne; daughter, Margaret (Missy) Ravel Elman; son, J. Stephen Ravel and wife Suzanne; four grandchildren; a brother, Victor Ravel; and cousins, nieces, nephews and friends.

Robert P. Sandman, M.A. 1952, Ph.D. (Chemistry) 1954 ~ passed away June 12, 2002, at the age of 79. He had been involved as a biochemist in the kidney transplant program and in biomedical and biophysical research in the Ophthalmology Department at UC San Francisco. He is survived by his brother, Joseph Sandman; his sister, Mary Clancy; many nieces and nephews; and longtime friend, Frank.

William Henry Selcer, B.S. (Chemistry) University of the South 1948, M.A. (Chemistry) UT Austin 1950, M.A. (Counseling) Webster University 1985 ~ passed away January 12, 2003. He was 75. William Selcer was a senior research chemist at Monsanto Company where he conducted research from 1950 to 1985. He holds five U.S. patents. He worked as a certified counselor/instructor for the Eastern Missouri Alternative Sentencing Services from 1985 to the time of his death. Selcer is survived by his wife, Mary Alice Chandler Selcer; children, Brant Chandler, Alison Haygood and husband Tommy; Brian Corneille Selcer, Kyle William Selcer and wife Nora, Camille Elizabeth George and husband Billy; and nine grandchildren.

John R. Stockton, B.S. (Pharmacy) 1938, M.A. (Lochte) 1941, Ph.D. (Microbiology) 1951 ~ died November 27, 2002, at the age of 85. Stockton owned and operated an executive search firm, Management Catalysts, for 30 years, retiring in 2000. In earlier years, he served as research director for several national food and drug companies. Surviving are his wife of 49 years, Norma Boyd Stockton; four sons, James Stockton, Douglas Stockton, John Richard Stockton, Jr., and Robert Dent Stockton; two daughters, Alexandra Stockton Fox and Joyce Stockton Eldredge; 22 grandchildren; and five nieces and nephews.

As always, we welcome updates on your personal and professional news.
Reminiscences of student experiences are appreciated also.

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