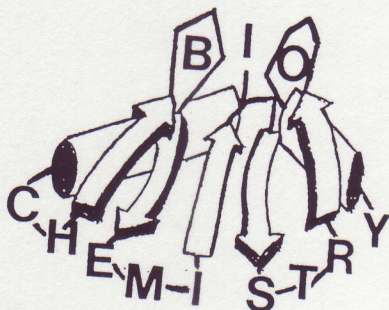


Summer

1991



FROM THE DEPARTMENT HEAD

In assuming this position, I have goals and expectations that the department will continue to advance in quality and recognition. The combined effort that is required in teaching, research, and various service activities tends to direct faculty into their own sanctums. Nevertheless, I believe a strength of our department has been the amicability of its members and our mutual interest in fostering the development of individual students. I hope that was apparent during your academic endeavors at KSU. It certainly is one of our goals to maintain that atmosphere. We are proud of the success of our extended department, you, and hope that you will let us know about your activities and achievements. Any help in recommending KSU to potential students and help in keeping us abreast of other special opportunities will be appreciated.

As with many enterprises, the department is experiencing interesting times. For the most part, we are continuing on a steady path toward becoming one of the stronger departments in the midwest region. Recently this has been challenging. In 1989 only eight regular faculty held positions in the department following a series of departures and retirements (see Department Update). Fortunately for us, preceding these changes, Owen Koeppe resigned his position as Provost and not only assumed a major teaching role in the department, but also took on the role of Acting Head during the 1989-90 academic year. We greatly appreciate his efforts, which included serving for two years on the

search committee for the head position. (I wish he had not made the head job look so deceptively easy though.) I would note that we had an outstanding group of outside candidates for the head position and the university twice went down the path of negotiation only to have personal circumstances prove decisive in candidates deciding not to come to KSU.

While having the fewest faculty in 1989-90, the department passed one million dollars in annual extramural support for the first time. Sustaining this level will prove difficult during this time of limited resources and intense competition for extramural support. We have hired three new faculty members, Laura Andersson (8/90), Michael Kanost (7/91), and Sam Wang (8/91), and anticipate filling additional positions in coming years. All three have had very productive postdoctoral careers and, while it is early in their careers, are recognized for accomplishments within their spheres of research. It will be exciting to watch their scientific development in the coming decade (cf, other sections describing their interests).

If you should visit during the coming year, you will find that we are fully occupying Phase I of the Chemistry-Biochemistry building that was completed in 1988. You will also find changes in Willard Hall where the Chemistry-Biochemistry Library and the department administrative offices have been renovated and expanded. If you graduated more than a few years ago you may be surprised by several developments: the high quality of the teaching laboratories with several additional items of equipment supporting these laboratories, new instruments and equipment supporting our research, and the use by most laboratories of gene cloning technology as a routine tool.

I am going to close each of my sections of these letters by telling you about (embarrassing) one member of the department. My first victim is Karl Kramer. Karl is an Adjunct Professor and has been an active member of the Department since he joined the USDA Grain Marketing Research Laboratory in 1974. Karl's research interests are in the area of insect growth and development. Specific interests concern insect proteins, hormones, and growth factors; tanning and other changes in cuticle structure and metabolism associated with the molting processes; and digestive enzymes and their

inhibitors. Karl is recognized as an international leader for his studies of the metabolism of catecholamines in insects and the metabolic transitions that occur during insect cuticle development. Over the years, Karl has collaborated with at least 6 members of the Department as well as with faculty from Entomology, Biology, and other universities. He has more than 120 publications and three active research grants. His grant support over the years has totaled over \$1.5 million. His collaborative research with Muthukrishnan and Reeck is extensive and productive. Karl has had a major role in the local chapter of the American Chemical Society, and has not only served as Secretary-Treasurer and Chair-Elect (1991), but has been involved in several ACS education activities for elementary and high school students. Karl is a member of the Editorial Board of Insect Biochemistry, has served as a reviewer for more than 25 other journals, and has reviewed grants for more than 15 agencies and programs. Karl brings great talent, effort, insight, and tolerance to all of his endeavors.

DEPARTMENT UPDATE

Much has happened in the Biochemistry Department since the last Newsletter in the Summer of 1988. That letter began with a message from David Cox stating that he planned to step aside as department head at the end of the 1988-89 year. This he did, and he left K-State in the summer of 1989 to assume the position of Dean of the College of Arts and Sciences at the University of Indiana-Ft. Wayne. He wished to find a position relatively near the town of Ida in northwestern Ohio where his wife, Tamara, had accepted a position in the theater department of Ohio Northern University. At a farewell dinner for David, he was presented with a replica of the bronze plaque that is now mounted at the entrance to the conference room in the new Chemistry-Biochemistry building indicating that it is the David Cox Seminar Room.

During the 1988-89 year a national search was conducted for a new department head. No one at K-State was willing to be considered for the position. An excellent candidate accepted the position; but, in the summer of 1989, withdrew for personal reasons. Owen Koeppel was appointed as acting head for the 1989-90 year. A new search was carried out during 1989-90, and Thomas Roche was selected from a very strong field of candidates. Tom came to K-State in 1974 and assumed his duties as department head on July 1, 1990.

In addition to the David Cox departure, several other faculty members are no longer active in the Department. In August of 1988 Bill Klopfenstein moved to Macomb, Illinois to become

Chairman of the Department of Chemistry at Western Illinois University. As he indicated in the last Newsletter, Phil Nordin retired in the spring of 1988. Ken Burkhard retired in October of 1989. He, Phil and their wives are all still living in Manhattan. Jerry Reeck took on new responsibilities in the summer of 1989 when he became Associate Dean of the Graduate School in the position that John Noonan held for many years. He currently devotes about two thirds of his time to the Graduate School and one third to the direction of his research programs. As this Newsletter is being prepared, Jerry has announced his intention to leave his Associate Dean position this summer and return to full time in the Biochemistry Department. Ray Ochs has decided to leave KSU for a position in the Nutrition Department at Case Western Reserve University in Cleveland, Ohio.

Recruitment for new faculty was delayed for more than a year, because it was agreed that this should await the appointment of a new department head. Searches were conducted during 1989-90 and 1990-91. Laura Andersson joined the faculty in August of 1990 and will continue her studies of various heme proteins using circular dichroism and other analytical tools. Two more additions will occur this fall. Michael Kanost will be moving to Manhattan from the University of Arizona. His research interests are in the area of insect hemolymph proteins. He brings with him an NIH grant supporting work on serum protease inhibitors in insects. Arriving following postdoctoral work at the Louisiana State University will be Xuemin (Sam) Wang. He summarizes his research interests as being the metabolism and cellular functions of plant membrane phospholipids.

FACULTY ACTIVITIES

From Laura Andersson - My lab uses spectral methods, such as circular dichroism (CD) and magnetic CD, to probe structure-function relationships in proteins and enzymes. For example, we are studying the sulfur drug-induced inhibition of mammalian lactoperoxidase. This process appears to involve the reduction of the active site heme (iron porphyrin) to an iron chlorin (structurally similar to chlorophyll). Other systems under study include those on mutant myoglobin: analysis of the effects arising from changing a single amino acid residue in the active site. (Myoglobin is the monomeric oxygen-binding heme protein of cardiac and skeletal muscle.)

Dolores Takemoto is spending a sabbatical spring and summer with Dr. Hilbers at the Laboratory of Biophysical Chemistry of the University of Nijmegen in The Netherlands gaining experience with high-powered (600 mh) 2D NMR.

Unfortunately his wife, Marilyn, died of cancer on March 17, 1991. Bryce has established an independent company called Bio-Research Products Inc. which is located at the Technology Innovation Center on the Oakdale campus of Iowa University. Building on his knowledge and interest in enzymology, the company is researching and marketing enzymes for the diagnostic industry. These include enzymes that are used in blood tests for glucose, cholesterol, triacylglycerols and others. Currently these are being sold to certain pharmaceutical companies for incorporation into kits. Bryce hopes that his company can develop their own kits in the future.

UNDERGRADUATE PROGRAM

Three undergraduate majors were involved in internships during the summer of 1990. **Cornel Gable** was at Rockefeller University in neural biology. **James Wassenberg** worked in biochemistry at Southwestern Graduate School, Dallas, Texas. **Signe Balch** was in a research program with NASA at the Kennedy Space Center. During the coming year she will be studying in the Netherlands.

The Department has added a second year two hour seminar course for undergraduate majors. The purpose of the course is to have students better prepared for Biochemistry 1 and 2.

The current activities of some of the 1990 graduates are as follows: **Katheryn Kaldor** - Kansas City School of Osteopathic Medicine, **Kathy Linenberger** - KU Medical School, **Tracy Skipton** - U. of Texas MBA Program, **Brent Steward** - KU Medical School, **Amy Taylor** - Baylor Medical School, **Annette Allen** - KU Pharmacology PhD Program, **Yun-Neng Li** - Southwestern Medical School Biochemistry PhD Program, **Debra Neel** -Baylor Medical School MD-PhD Program.

1991 graduates have the following plans: **Cornel Gable** - hopes to attend a California medical school after establishing residency there, **Brian Neir** - KSU College of Veterinary Medicine, **James Wassenberg** - a year's study in Zurich, Switzerland followed by the Biochemistry PhD program at the University of Wisconsin.

RECENT GRADUATE DEGREES

Listed below are the graduate degrees that have been awarded by the department since the last Newsletter. Shown in brackets are the degrees earned and the major professors.

1988

Christina Chang (PhD, Davis) "Characterization of nif H Gene Mutants from *Klebsiella Pneumoniae*." Christina is in the Department of Pediatrics at the

University of Michigan cloning and expressing mutants of the c-myc protein of *E. Coli*.

Dan Morrison (PhD, Takemoto) "Interaction of the Gamma Inhibitory Subunit of the Retinal Rod Outer Segment Phosphodiesterase with Retinal Rod Outer Segment Proteins: Use of Synthetic Peptides as Functional Probes." Dan is at the University of Illinois-Chicago doing postdoctoral work on the role of palmitoylation on signal transduction in the retina.

Burachai Sonthayanon (PhD, Muthukrishnan) "Divergent α -Amylase Genes in *Hordeum Vulgare*: Characterizations of Genes from Two Different Chromosomes and Preliminary Transient Expression Study in Protoplasts from Aleurone Cells." He has returned to Thailand to a research position in Bangkok.

Mark Swegle (MS, Muthukrishnan) "Identification of an Endochitinase cDNA Clone from Barley Aleurone Cells."

V. Vijayalakshmi (MS, Davis) "The effects of pH on the Self-Association of Phycobiliprotein from *Anacystis Nidulaus R₂*." She has moved to Florida with her husband.

1989

Li, Lin (MS, Roche) "Studies on the Mammalian Pyruvate Dehydrogenase Complex: Pyruvate Dehydrogenase Kinase Binding Sites, Reductive Acetylation Reaction and Extrinsic Control." Lin is in a PhD program at Johns Hopkins University.

Susan Powers-Greenwood (MS, Roche) "Separation of Protein X from the Dehydrolipoyl Transacetylase Component of Mammalian Pyruvate Dehydrogenase Complex and the Study of Protein X."

Harold Rathburn (PhD, Hedgcoth) "Characterization of the Mitochondrial DNA of Cytoplasmic Male Sterile *Triticum Aestivum*." Harold is currently in the insect pathology laboratory with USDA in Beltsville, MD. working on the baculo virus.

Basil Shorrosh (PhD, Reeck) "The Molecular Biology and Biochemistry of Rice Endosperm α -Globulin." He reports that his research is going well in his postdoctoral position at the Noble Foundation in Ardmore, OK.

Menjor Tino Unlap (PhD, Hedgcoth) "Characterization of a Wheat Gene Coding for Polyglutamine and the Chromosomal Locations of Selected Storage Proteins." Tino is in his second year of studying oncogenes in a postdoctoral position at the University of Alabama Medical School in Birmingham.

1990

Ming-shun Chen (PhD, Reeck) "Characterization of Insect α -Amylase, Cloning and Expression of Oryzacystatin cDNA in *E. Coli*." Ming-shun is now a postdoctoral research associate in St. Louis working on heat shock proteins.

She is there with her two children. Larry (of the Biology Division) will be joining them during the summer. Last fall **Nicolai Khramtsov** from the Shemyakin Institute of Moscow State University joined her lab as a visiting scientist. His interests there and here are eye research and G proteins.

Larry Davis, during a Fall-1988 sabbatical, spent a month in China as the guest of the Chinese Academy of Agricultural Sciences. His expenses were paid by the UN Development Program. In Beijing he presented about a dozen lectures on all aspects of nitrogen fixation. He found it a new and interesting experience to depend on a translator to convey his message to a large part of the audience. After two weeks in Beijing he spent shorter times in Wuhan, Hangzhou and Shanghai giving a number of lectures and consulting with faculty in the same research areas. He reports that it was a wonderful experience, especially the food. His greatest adventure was traveling alone from city to city, depending entirely on making the right connections and hoping that someone would understand enough English to help out if he got lost. In addition to the China trip, he spent two weeks each at Wisconsin and UCLA.

LOCAL NEWS

Jerry Reeck received the KSU Outstanding Graduate Faculty award in the spring of 1989. This award is given annually to no more than two KSU faculty. It carried with it \$1500 which Jerry donated to the Department to help support graduate education.

A few years ago, the College of Arts and Sciences initiated undergraduate teaching awards for faculty and graduate teaching assistants. Faculty awards have been won by **Kenneth Burkhard** and **Charlie Hedgcoth**. **Sandy Murphy**, **Brenda Oppert** and **Maryam Hazeghazam** have received awards for their work as Teaching Assistants.

Subbaratnam Muthukrishnan has been promoted to Professor as of the fall of this year.

Debra Neel, an undergraduate major, was selected as the outstanding student in the College of Arts and Sciences during the Spring-1990 semester.

OLD FRIENDS

David Cox. As was indicated earlier, David is now the Dean of the College of Arts and Sciences at the University of Indiana - Ft. Wayne. After almost two years in the position, he reports that things are going well. They have budget problems, but probably not as serious as those current in Kansas. Deaning is a full time job. He has little, if any, time for biochemistry. The College that he heads represents 50% of the University's faculty and at least 60% of the student credit hours. He has just

completed a project to put a computer in the office of every member of his faculty. With office computers, they have the ability to access the catalogs of the libraries of the entire Indiana higher education system. Most of the students are from that area of Indiana. Many are part-time, older (average age 27), and with special needs. He has been working on programs to improve the assistance available to students coming from academic, social and economic backgrounds that place them at a disadvantage relative to success in higher education. He says that "if access to higher education is really a top priority with today's leaders, then major research universities are not on the cutting edge, but we are."

Donald Parrish. Don continues to live in Manhattan. The Department was sorry to learn of the death of his wife, Hazel, on July 27, 1990. He has made trips to visit his daughter in Montgomery, Alabama and his son at Scott Air Force Base near St. Louis, Missouri.

William Klopfenstein. Bill has completed nearly three years as Chairman of the Chemistry Department at Western Illinois University. The University has an enrollment of over 12,000. The Chemistry Department has 11 faculty members, about 80 undergraduate majors and 15 graduate students in an MS program. There is an undergraduate program for majors in biochemistry. Bill reports that his department's space situation is quite good. The biggest needs are for more modern teaching and research equipment. He says that his university is currently facing some financial problems, typical of those faced by many state-supported universities throughout the country. Overall he states that things are going well in his department. In a communication to KSU about a year after his departure Bill said that "Deciding to leave KSU (after 24 years) and all of my friends was not easy, and there have been a number of days when I questioned my sanity for making the move. . . . In closing I would like to say that I enjoyed my association with the students and faculty in the department at KSU."

Kenneth Burkhard. The semester after Ken retired, he took a music course with music majors. One of his assignments was to prepare a musical composition. It was selected as one of the best compositions and worthy of performance by a instrumental group composed of members of the class. Ken and Maxine remain active in the Inspiration Point Fine Arts Colony in Eureka Springs, Arkansas where he is a member of the Board of Trustees and she of the Board of Directors. They recently attended a meeting of the Federation of Music Clubs of America in Philadelphia.

Bryce Cunningham. Bryce is living in Coralville, Iowa (just outside of Iowa City).

Kevin Conricode (PhD, Ochs) "Studies on the Hormonal Regulation of Hepatic Metabolism." Kevin is at Vanderbilt University in postdoctoral work with John Exton.

Subramanian Gopalakrishnan (PhD, Roche) "Immunological and Enzyme-Linked Assay Studies to Investigate the Role(s) of Protein X in the Functioning of Bovine Pyruvate Dehydrogenase Complex." He is currently in a postdoctoral position with Larry Takemoto of KSU's Division of Biology.

1991

Paul Cerpovicz (PhD Ochs) "The Potential Role of Guanine Nucleotides in Cellular Regulation." Paul will be staying at KSU in a postdoctoral position with Jerry Reeck.

Kirk Clark (PhD, Reeck) "Sequence Alignments without the use of Arbitrary Parameters." He is currently at Rockefeller University working with Stephen Burley on the isolation, crystallization and 3-D structure of transcription factors.

Michael Denton (PhD, Reeck) "The Purification and Domain Architecture of High Mobility Group Proteins 1 and 2." Mike is working at the Lankenau Medical Research Center in Philadelphia.

Bhuvana Gopalakrishnan (PhD, Muthukrishnan) "Barley Aleurone Layer Cell Protoplasts as a Transient Expression System for Analysis of Hormonal Regulation of α -Amylase Genes." She is currently deciding among several postdoctoral possibilities.

Mahmoud Mansour (MS, Roche) "Studies on the Mammalian Pyruvate Dehydrogenase Complex: Determination of Sedimentation Coefficients for PDC Components and some Subunits, Kinase and Phosphatase Purification." He has accepted a position at Pfizer in Groton, CT.

Brenda Oppert (PhD, Takemoto) "Identification of Retinal c-GMP Phosphodiesterase Inhibitor (γ) Subunit Interaction Sites on the Catalytic (α) Site." Brenda has just started postdoctoral work with Karl Kramer at the Grain Marketing Research Lab. here in Manhattan.

Aruna Pingali (MS, Reeck) "Isolation and Characterization of a Chitinase with Antifungal Activity." She is in a PhD program at Purdue University.

Mark Swegle (PhD, Muthukrishnan) "Barley Seed Chitinases." Mark will be leaving for postdoctoral work in the near future.

Jize Xiong (MS, Hedgcoth) "The Characterization of Mouse Lysine t-RNA Genes." Jay is now working on an MS in Electrical Engineering at K-State.

Guohua Feng completed a PhD in Food Science working in Jerry Reeck's lab. The thesis was titled

"Studies of Cereal Proteinaceous Inhibitors of α -Amylases." Guohua is now a postdoctoral fellow at Washington University in St. Louis working on the control of transcription.

Binghui Shen completed a PhD in Genetics working in Larry Davis' lab. The thesis was titled "Studies on Symbiotic Nitrogen Fixation in the Soybean - Rhizobium System." He is now in postdoctoral research at U.C.-Irvine working with Barbara Burgess on Azotobacter ferredoxins.

NOTES FROM ALUMS

Dennis Bidney (PhD '78) is with Pioneer Seed in Des Moines, Iowa working on the genetic modification of sunflower to improve its agronomic traits.

Georges Chong (PhD '88) has finished a program in clinical chemistry at the Mayo Clinic in Rochester MN.

Randy Corfman (PhD '79) following an M.D. at the University of Kansas, some time at the Wesley center in Wichita, and a few years at Yale is now in the OB-Gyn Department at the Mayo Clinic. One of his major projects is in vitro fertilization.

Ira Goldknopf (PhD '71) is now director of quality control for GAFK Chemicals in Kentucky. He was at Baylor University for a decade and spent a few years at the Karolinska Institute in Sweden prior to his present post.

Debra Montgomery (MS '87) is working in the research division of Abbott Laboratories in North Chicago, IL. She is purifying topoisomerase II from yeast, in addition to raising a family.

Tom O'Conner (PhD '79) is working in veterinary diagnostics development in Maine.

Ernie Pitts (MS '88) finally achieved his ambition of becoming a flight instructor in California. Prior to that he was manager of the sequencing facility at the University of Missouri-Kansas City.

Dave Roerig (PhD about '70) is a faculty member in the Health Sciences Division of the University of Wisconsin College of Medicine.

Dan Stoops (MS '78) is working in the Department of Foods and Nutrition at the University of Missouri, Columbia, MO. His wife Janet, a chemistry major from KSU, is currently busy with the care of three young children.

Lisa Wen (PhD '83) and **Jack Huang** (PhD '85) are in the Chemistry Department at Western Illinois University where Bill Klopfenstein is department head. Lisa is an Assistant Professor working on the cloning of seed storage proteins and inhibitors. Jack is on contract doing research with the Northern Regional Research Laboratory of USDA in Peoria.