

# CHAPTER VII

## MOVING ON (1993-2003)

### A New Leader

#### Michael Waterman

Michael Waterman, then Professor of Biochemistry and Interim Vice Chairman of the Department of Biochemistry at the Southwestern Medical School of the University of Texas in Dallas became the fifth Chairman of the “modern” Department of Biochemistry at Vanderbilt in July 1992.

Mike Waterman was born in Tacoma, Washington, and received his B.A. degree in Chemistry at Willamette University in Salem, Oregon, in 1961. He received his Ph.D. in Biochemistry from the University of Oregon Medical School in Portland in 1969 working under Howard Mason on “Redox and Related Properties of Microsomal Cytochrome P-450.” Following a postdoctoral fellowship with Takashi Yonetani at the Johnson Research Foundation, University of Pennsylvania, studying modified hemoglobins, he joined the faculty at the University of Texas Health Science Center, Dallas, as Assistant Professor in 1970. He rose quickly through the ranks to become Professor of Biochemistry at the renamed University of Texas Southwest Medical Center at Dallas in 1982. An early interest in the developing entrepreneurial aspect of modern biomedical science became evident as Waterman became a founding member of Oxygene, Inc. in 1989. Indeed, throughout his career he has maintained an active consulting role with a variety of companies.



Michael Waterman, Chair of the Department of  
Biochemistry, 1993-

His continuing research interests have been in the mechanisms of regulation of gene expression by peptide hormones, the molecular basis of induction and the structure and function of cytochromes P-450. He has carried on a vigorous program of training of pre- and postdoctoral students in his laboratory, and his obvious interest in graduate education had led him to place a high priority on these areas in developing his program for the Vanderbilt Department of Biochemistry.

Perhaps Waterman's view of the developing field of biochemistry is most evident in the series of faculty additions he has made and programs he has initiated or strengthened since coming to Vanderbilt. The Department has also benefited from participation in a new burst of major interdepartmental and interschool projects such as the Vanderbilt Ingram Cancer Center, neurobiology, structural biology and genetics.

The development of interdepartmental, multidisciplinary cancer research at Vanderbilt particularly has involved many Biochemistry faculty. Marnett, Carpenter and Guengerich all had leadership roles in the initiation of the Vanderbilt Ingram Cancer Center and, after a decade, Carpenter, Hiebert and Pietenpol continue in leadership positions.

## **State of the Department; A New Millenium**

A full description of the progress of the Department of Biochemistry after 2000 is best left to others. That history will certainly be seen to be just as unique and special in the continuing development of biochemistry as I have felt about the years since 1953. A brief departmental "statistical" report and a short description of recently appointed members of the faculty will conclude this present effort.

In 1999, according to the Departmental newsletter, the Department's NIH research funding was in excess of \$12 million dollars, placing it at the top of U.S. departments. Total research funding was above \$15 million. As in past years, Biochemistry

continues to bring more research dollars to Vanderbilt than any department except Medicine, a much larger Department. The Department of Biochemistry had, in 1999, 23 fulltime tenure track faculty including 14 Professors, 4 Associate Professors and 5 Assistant Professors. There were 26 Research Faculty, including 1 Research Professor, 3 Research Associate Professors, 9 Research Assistant Professors, and 10 Research Instructors. There were 10 secondary faculty, 1 adjunct faculty, 4 visiting faculty and 55 postdoctoral fellows. There were 6 M.D./Ph.D. students plus 28 Ph.D. students for a total of 34. The Department at this time occupies about 47,000 nsf on the 6<sup>th</sup> floors (new numbering) of Light Hall and the Robinson Research Building (MRB-I) and on the 8<sup>th</sup> floor of the Robinson Research Building and the Frances Preston Research Building (MRB-II or PRB).

## **Faculty 1994-2001**

### **Joachim Ostermann**

Ostermann came to the Department after postdoctoral research in the laboratory of James Rothman, first at Princeton and later at Sloan-Kettering. He had received his Ph.D. under Professor Walter Neupert in Munich. His primary research interest was in the area of cellular vesicle formation, in particular the mechanism of membrane fusion, the process required for transport through Golgi membranes. He left the Department in 2000 to return to Germany.

### **Richard Armstrong**

Richard Armstrong joined the faculty as Professor of Biochemistry in 1995 from a similar post at the University of Maryland, College Park. His very strong background in chemistry has made him an invaluable member of the Center in Molecular Toxicology. In 1997, he was also appointed Professor of Chemistry, a rare occurrence at Vanderbilt in the past. At Vanderbilt, Armstrong's research interests have been in the applications of

physical organic chemistry to biochemical and biotechnological problems, including the mechanism and stereochemistry of enzyme-catalyzed reactions and the metabolism and detoxification of drugs and toxic compounds. He has brought renewed strength to the graduate program in areas of fundamental chemistry.

His national stature is evident in his role on the Editorial Board of the *Journal of Biological Chemistry* and as an Associate Editor of the *Journal of the American Chemical Society*. Quite recently he received the signal recognition of being selected to serve as Editor of *Biochemistry*, only the third individual to serve in this role since the inception of this important journal.

### **Richard Caprioli**

Caprioli received his Ph.D. at Columbia University in 1969 under David Rittenberg. Following postdoctoral and faculty positions at Purdue, he joined the Department of Biochemistry and Molecular Biology at the University of Texas Medical School at Houston where he became Professor in 1980. He was a consultant in Mass Spectrometry in the Department of Hematology at M.D. Anderson Cancer Center concurrent with his appointment as Professor in Biochemistry and Molecular Biology at the University of Texas, Houston Graduate School of Biomedical Sciences. He was also Director of the Analytical Chemistry Center. He joined Vanderbilt in 1998 as Professor of Biochemistry, Chemistry and Pharmacology and Director of the Mass Spectrometry Research Center. He currently holds the Stanley Cohen Professorship.

His main research interests involve the investigation of biological processes concerned with the synthesis, modification, storage and degradation of a variety of peptides and proteins utilizing mass spectrometry. He uses primarily two approaches. The first involves *in vivo* metabolic studies of rats with the aid of microdialysis sampling techniques followed by identification and quantification by electrospray tandem mass spectrometry. The second uses molecular imaging technology, under development in his laboratory, to directly characterize tissue location and quantification of proteins and peptides.

### **Bruce Carter**

Carter joined the Department of Biochemistry as Assistant Professor in 1997 as a member of the interdepartmental Center for Molecular Neuroscience. He was promoted to Associate Professor in 2003. His current research relates to mechanisms of nerve degeneration and regeneration and the role of neurotrophin in Schwann cells. He is particularly interested in the differing pathways and effects of binding of nerve growth factor (NGF) to different types of receptors. He is very active in teaching, especially in the graduate program, and brings new vigor to the Department in a growing area of importance, neurobiochemistry.

### **Walter Chazin**

A faculty appointment signaling a very significant renewed commitment by the University and the Department of Biochemistry to the field of molecular structure was made in 1999. Walter Chazin was appointed Chancellor's Professor of Biochemistry and Director of the interdepartmental, interschool Structural Biology Program. Chazin came to Vanderbilt from the Department of Molecular Biology of the Scripps Research Institute. His current research interests are wide ranging. They include NMR studies of the structure and dynamics of calcium binding proteins, signal transduction by calcium-dependent protein kinases in plants, regulation of assembly of DNA repair complexes and the molecular basis of the binding by antitumor DNA ligands. Chazin has a strong record of interest and participation in research training at all levels from undergraduate through postdoctoral and will be deeply involved with similar programs as this new Structural Biology Program develops.

### **Jeffrey Flick**

Jeffrey Flick was appointed Assistant Professor of Biochemistry in 1994. He came to Vanderbilt from postdoctoral research under Jeremy Thorner at the University of California, Berkeley. He initiated a research program related to phosphoinositide metabolism

and phospholipase C and undertook teaching roles in several departmental courses. He left Vanderbilt in 2000.

### **Scott Hiebert**

Hiebert joined the Department as Associate Professor in 1997, and was promoted to Professor in 1999. Throughout, he has also been a member of the Vanderbilt Cancer Center. He came to Vanderbilt from a position as Associate Member of the Department of Tumor Cell Biology, St. Jude Children's Research Hospital in Memphis. His research is aimed at molecular mechanisms of acute leukemia including cell cycle control and the action of tumor repressors and involves studies of the regulatory roles of several transcription factors in apoptosis and leukemogenesis. He has taken on a strong role in the graduate teaching program and is active in all departmental affairs.

### **Youngchang Kim**

Kim joined the Biochemistry crystallography group in 1994 as Assistant Professor. He had received his Ph.D. in crystallography at the University of Pittsburg and completed postdoctoral training at Yale before joining the Vanderbilt faculty. Here he undertook collaborative structural studies with several of the Biochemistry faculty. He left Vanderbilt in 2001.

### **Jennifer Pietenpol**

Jennifer Pietenpol received her Ph.D. in Cell Biology at Vanderbilt under Harold Moses. After postdoctoral research in Bert Vogelstein's laboratory at Johns Hopkins, she returned to Vanderbilt in 1994 as Assistant Professor of Biochemistry. In 1999, she was promoted to Associate Professor and in 2003 to Professor. She is an active member of the Vanderbilt Cancer Center where she currently serves as Associate Director for Basic Science Programs. Her primary research interests concern the mechanisms of regulation of cell cycle checkpoints and the biochemical activation of p53.



Old and New Biochemistry Faculty Honored by the School of Medicine, 2001. Left to right: Lawrence Marnett, Neil Osheroff, Michael Waterman, Richard Caprioli, Tadashi Inagami