

NEWSLETTER FROM THE DEPARTMENT OF ANATOMY AND NEUROBIOLOGY

Boston University School of Medicine · Division of Graduate Medical Sciences



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A Message from the Chairman

You have before you the inaugural issue of the Newsletter of the Department of Anatomy and Neurobiology. Only through the efforts of two energetic and creative graduate students, Juliana Mariani and Maureen Estevez, has this endeavor come into existence. It is my hope and expectation that this represents the first issue of many to come.

Given the many notable achievements of the faculty, students and staff of the Department, editorial decisions regarding content in a very limited space were difficult. But it was widely thought that this first issue should recognize two of our more illustrious faculty members, past and present. The first is an article in memory of Dr. William McNary, a beloved teacher, colleague, and Associate Dean of Students at BUSM for over 18 years. The second is an article written by Dr. Alan Peters on the history of electron microscopy. Dr. Peters, chairman for over 32 years (1966-1998), established the Department as one of the national leaders in cerebral cortical organization and is recognized as one of the world's experts on central nervous system ultra-structure.



Faculty, staff and students at the Department's annual retreat, May 30, 2003.

As of this writing, the Department of Anatomy and Neurobiology has reached another milestone in its history. Last week the Carnegie Foundation announced that the Department has been selected as one of 19 departments nationwide as a Partner Department in the Carnegie Initiative on the Doctorate (CID) for Neuroscience or History. The five-year initiative is aimed at

re-assessing the role of doctoral education in this country. We are very pleased by this event and look forward to working as a member partner in the CID.

Dr. Mark Moss has been the Chairman of the Department since 1998. He is also Co-Director for the Laboratory of Cognitive Neurobiology.

A Tribute to Dr. William F. McNary



Dr. McNary, as Grand Marshall, leads the procession at BUMC graduation.

William F. McNary Jr. was born on November 17, 1926, to William F. and Bessie Ellen Kerkhoff McNary. He grew up in Attleboro, Massachusetts, where he attended elementary, middle and high school. In 1943, he joined the United States Army and served until 1946. While based in Ohio, he met his future wife, Norma Jean Willson.

In 1949, he received his Bachelor of Science Degree from what was then called Tufts College graduating *Magna Cum Laude*. He enrolled at Boston University in the Department of Anatomy and received his Ph.D. in Anatomy in 1954. After receiving his Ph.D., he remained at BU, in one capacity or another, for the remainder of his life.

Bill was truly a Renaissance man. His

interests spanned a wide range of activities from sports to Ancient Egyptian history to carpentry. Over his lifetime he repaired and built many small boats. Although his skills excelled, his planning sometimes lacked. Once, he built a magnificent boat, only to discover that it was too large to get out of the basement in one piece.

Bill also had a great sense of humor. He was wise and compassionate, but could also be amazingly stubborn. When he and Jean were newlyweds, they passed a fish restaurant in the North Shore advertising two lobsters for the price of one. He could not resist such an offer, despite the fact that he was severely allergic to lobster.

(story continued on page 5)

Breaking News from the Autism Center

We are delighted to announce that the Lab of Developmental Cognitive Neuroscience, under the direction of Helen Tager-Flusberg, Ph.D., has been selected as one of eight new autism research centers in the Studies to Advance Autism Research and Treatment (STAART) Centers Program. This new multi-site research center, sponsored by the National Institute of Mental Health (NIMH), will enable us to extend our research program through collaborations with researchers at Tufts/New England Medical Center, Dartmouth University, and the Waisman Center at the University of Wisconsin – Madison.

The STAART Center grant will provide funding for four new research projects. In these projects, some conducted at Boston University and some at our collaborating institutions, we will investigate the effects that raising an autistic child has on other members of the family; the anatomy of structures in the brains of people with autism through post-mortem analysis, conducted by Gene Blatt, Ph.D., and Margaret Bauman, M.D., of the Department of Anatomy and Neurobiology; the activa-



Dr. Robert Joseph, clinical neuropsychologist and Assistant Professor in the Department, works with a participant completing a face-processing task in the CPEA autism research program.

tion levels in certain parts of the brain in response to stimuli through functional MRI; and the effects of a new type of treatment on the symptoms of autism. This new center will bring the Lab nearly \$1.7 million per year in new grants, and has resulted in an expansion of our research team and office space. We are tremendously excited to be a part of this new autism research pro-

gram, and look forward to sharing our findings and opportunities for participation in these upcoming research projects.

Laura Stetser is Lab Administrator for the Lab of Developmental Cognitive Neuroscience. She oversees administrative details for all the projects conducted in the lab.

The Birth, Life and Demise of Electron Microscopy



Dr. Peters is pictured here sitting before his electron microscope.

The birth of the electron microscope is usually attributed to E. Ruska, who developed the first one in Germany in 1933. The first commercially available electron microscopes in America were built by RCA in the 1940s.

The life of the electron microscope as an instrument for examining biological tissues began in about 1945, when Keith Porter and Albert Claude at the Rockefeller Institute took pictures of cytoplasm and its organelles in the thin processes of cells that had been grown in tissue culture. They used an RCA electron microscope housed at the Interchemical Corporation in New York and operated by Ernest Fullam. However, it was obvious that further progress in examining the fine structure of cells would not be made until thin sections of tissues could be obtained.

The first attempts to produce these thin sections were made using conventional microtomes with steel knives, but this

did not work well, since the embedding media used for light microscopy was not suitable for thin sectioning. Nevertheless, fragments of thin sections were sometimes obtained. By the early 1950s, Keith Porter and Joseph Blum had developed a simple commercially produced single pass microtome, the Porter-Blum MT-1 ultramicrotome. Then, George Palade showed that good fixation could be obtained by immersing tissue in osmic acid buffered with veronal; Harrison Latta and J. Hartmann demonstrated that it was possible to routinely produce glass knives from sheets of glass; and the plastic research group at the U.S. National Bureau of Standards, E. Borysko and M. Swerdlow and their colleagues, introduced methacrylates for embedding the osmicated tissue. Now the stage was set for an explosion of studies looking at the fine structure of cells and tissues. Cell Biology was born.

(Story continued on page 6)

A Tribute to Dr. McNary (continued)

Since he hated sharing his health difficulties with others, he neglected to tell Jean of his lobster allergy. He gloried in the meal, but as they were returning home in the car both of his eyelids began to swell shut in an allergic reaction. Unfortunately, Jean did not have a driver's license, so Bill slowly drove home with eyes swollen shut while Jean told him how fast to drive, where to turn, and when to stop and start.

In 1954, Bill became an instructor in the Department of Anatomy at BU School of Medicine. In 1958, he became an Assistant Professor of Anatomy, and in 1966, he was promoted to Associate Professor of Anatomy. His early research interests included the study of the endocrine system, concentrating on the pituitary gland. Later, he focused on the lung, analyzing Type II alveolar cells.

All who knew Bill recognized that his primary contributions to humanity were not in the laboratory, but in the classroom. He taught Gross Anatomy, Histology, Neuroanatomy, and Embryology to uncounted numbers of students. He was beloved by his students and revered and envied by his fellow faculty. He taught without the innovations of 35mm slides and before anyone knew the word PowerPoint. Instead, he drew beautiful, colorful illustrations which flowed from his chalk in an effortless stream. To Bill, teaching wasn't work. It was a joy; it was his life.

He was famous for many of his lectures, but one of the most memorable was his lecture on the female reproductive system. Wearing an oversized laboratory coat, he would stand on the elevated stage and intone, "I am the uterus." Then, raising his arms with his sleeves fluttering, he would exclaim, "And these are the fallopian tubes caressing the ovaries." As his smile broadened, the laughter would cascade through the room.

In 1973, Bill assumed the position of Associate Dean of Students of the BU School of Medicine, which included mentoring and advising medical students throughout their academic careers. Bill took special interest in each and every student, even providing his home phone number so they could reach him at any time. In short, Bill became the father of a family of medical students. Each year for his birth-



Dr. McNary enjoying one of his favorite pastimes

day, students showered him with surprises. They decorated his office (with toilet paper) and made him cakes in the shape and length of a person. He enjoyed every minute.

In 1990, Bill was diagnosed with lung cancer that was metastasizing to his brain. The news of his illness hit the campus like a thunderbolt. Nevertheless, Bill refused to slow down, persisting in teaching and advising students. He refused to wear a wig when losing his hair, although he could sometimes be found donning a clown wig given to him by his students.

The class of '91 organized a roast in his honor. Students and colleagues traveled from all over the world to attend the roast. Those who could not come sent messages. Each day the calls flooded in. At the time of the roast, he was very weak and could only stand for short periods of time. Those around him, most with tears in their eyes, extolled his virtues and poked fun at his foibles. Despite the depth of his understanding, Bill never fully realized what he meant to everyone. While he conveyed disappointment for goals unattained, he never saw that he had succeeded beyond his wildest dreams.

On May 19th, 1991, William F. McNary Jr. died of the cancer that had ravaged his body and mind. He left behind his wife Jean, his three children, Scott, Judy and Kim, and a local, national and even worldwide community. At the time of his death, he had taught over two-thirds of the students who had passed through the doors of the Medical

School. In a memorial service on May 24th, 1991, Larry Burton, the former chaplain at University Hospital said, "He was a man of uncommon virtue. He is clearly a rare soul."

Dr. Zoller is an associate professor of anatomy and neurobiology in the department. He is also currently the Ombudsman for the Department.

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Let's Congratulate Our Outstanding Professors

Dr. Richard Hoyt

Educator of the Year in Preclinical Sciences Award

Dr. Mark Moss

Stanley Robbins Award

Dr. Larry Zoller

Proctor & Gamble Award for Excellence in Teaching from the Goldman School of Dental Medicine

Let's Welcome Our New Graduate Students

Masters

Felicia Tibayan

Lia Jean Welsch

Karin Zacharin

Ph.D.

April Alt

Steve Schettler

MD/Ph.D.

Rahul Desikan

Chris Holland

(Electron Microscopy continued)

On a personal note, I remember that the first thin sections I looked at were made in 1953. They were produced with a modified conventional microtome, using glass knives and methacrylate embedding. The electron microscope I used had a 35mm camera and was made by Phillips.

Subsequently, better embedding media, such as the epoxy resins that were introduced by John Luft in 1961, became available, and in 1963, Sabatini, Bensch and Barnett showed the advantages of using glutaraldehyde as a primary fixing agent. Unlike osmic acid, glutaraldehyde, which is a dialdehyde, did not distort macromolecules. Unfortunately, its purification process was long and arduous until it became commercially available. Thus, osmic acid did not disappear from the scene. In fact, it is still used as the prime means to introduce heavy, electron dense molecules into tissue.

An explosion of studies looking at the fine structure of cells and tissues emerged. Cell Biology was well underway and many anatomists were using electron microscopy. For example, during the 1980s, this department had four transmission electron microscopes and one scanning electron microscope.

By the end of the 20th century, the fine structure of most tissues of the body had been examined, and molecular biology began to take center stage. This led to a reduction in the use of electron microscopes. Now this department has only one aging instrument.

Is there a future for electron microscopy? Is it dying? I think that the answer is "No." Electron microscopy provides information that cannot be found by other means. For example, antibody labeling can be readily seen by confocal microscopy using the vast array of antibodies now available, but exactly which cell types and what components of cells are binding the label can often only be resolved by electron microscopy. Other important uses for electron microscopy are to determine the effects of age on cells and to analyze mutagenic changes in cells and tissues. It is sad that nowadays only a few journals are still prepared to publish aesthetically pleasing and attractive electron micrographs. In many of the younger journals, the illustrations have degenerated into indecipherable, digitized, postage stamp-sized images.

Dr. Alan Peters is a Professor of Anatomy and Neurobiology and has been teaching and conducting research in the Department since 1966.

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