American Association of Anatomists

THE MANY *Faces* OF ANATOMY

Introduction

Since its founding in 1888, the American Association of Anatomists (AAA) has, through the individual efforts of its members, and collectively as a pre-eminent scientific society, made many significant contributions in anatomical science research and education. Members of the AAA have been recognized worldwide for leading edge scientific accomplishments that have been honored at the highest levels, research that has been enshrined as eponyms in basic science and medicine, and the generation of documents that have literally changed the approach, direction, and emphasis of anatomical science education around the world.

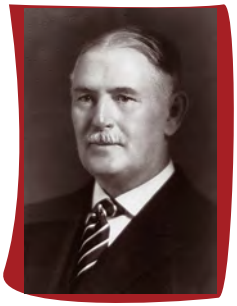
In honor and recognition of its 125th Anniversary, AAA created this commemorative brochure to highlight individuals that represent a cross-section of members spanning a broad range of expertise, accomplishment, time frames, and overall contributions to the field. It is recognized that a favorite individual may not appear here. However, nominations were received from the membership, and from committees, and most were included. In addition, many notable members also served as President of the AAA and they are recognized elsewhere in this celebration. We hope the members enjoy this snap shot.

American Association of Anatomists

Oliver S. Strong

(b. 29 December 1864; d. 22 February 1951) had a long and notable affiliation with Columbia University; he became a Fellow in Biology (1891), received his PhD (1895), and retired in 1937. In addition to his publications on topics as diverse as cranial nerves, cerebellar agenesis, experimental methodology, spinal cord tracts, and neurohistology; Strong had an encyclopedic knowledge of brain anatomy. This was shown by his participation in neurology clinics, co-authorship of *Textbook of Histology*, his decades of service to the *Journal of Comparative Neurology*, but primarily by the enthusiastic reception of 3 editions his text *Human Neuroanatomy*. This book's reputation of excellence assured its passage through many editions.

G. Carl Huber

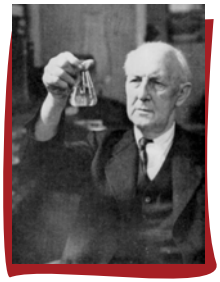


(b. 30 August 1865; d. 26 December 1934) was one of the dominant influences in the development of anatomy at the University of Michigan during the first half of the 20th century. After graduation from the University of Michigan Medical School in 1887, he began as Assistant Demonstrator of Anatomy and remained on the faculty – the last 20 years as Chair – until his death in 1934. For eight years he was also Dean of the Graduate School. Along with George Streeter, he founded the Embryology Research Collection at Michigan and concentrated his research in this area on kidney development. He served the AAA as both Secretary-Treasurer and President and was managing editor of *The Anatomical Record* until 1920.

Thomas Hunt Morgan

(b. 25 September 1866; d. 4 December 1945) received his PhD from Johns Hopkins University in 1890 and became an Associate Professor at Bryn Mawr the following year. He did not begin his famous work with fruit flies until 1908, during his time at Columbia University, when he began studying the inheritance of mutations. Morgan also proposed the ideas of genetic linkage and crossing over. Additionally, Morgan maintained an interest in evolution and in marine biology throughout his career. He was awarded the Darwin Medal in 1924 and the Nobel Prize in Physiology or Medicine in 1933 for his work implicating the role chromosomes play in heredity. In Morgan's honor, the Thomas Hunt Morgan Medal is awarded annually by the Genetics Society of America.

Robert R. Bensley

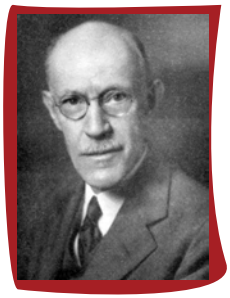


(b. 13 November 1867; d. 11 June 1956), noted histologist, worked at the University of Toronto as a Demonstrator while also practicing medicine after graduating from medical school in 1892. He left to become the head of the Anatomy Department at the University of Chicago in 1901. There, he improved staining techniques to visualize the cells of the islands of Langerhans, which led to F. Banting's discovery of insulin. Bensley also confirmed the presence of the Golgi apparatus, and demonstrated the means of gastric secretion of hydrochloric acid. Bensley elucidated the chemical composition of mitochondria with one of his students, Norman L. Hoerr, and improved other techniques used in cytochemistry. Bensley continued his work late into his life, presenting his last paper to the Histological Society in 1953.

Charles Judson Herrick

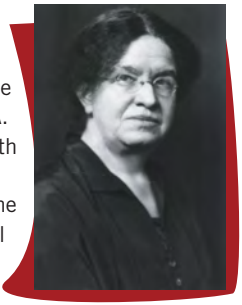
(b. 6 October 1868; d. 29 January 1960) became the Editor of *The Journal of Comparative Neurology* at the age of 25 years, consequent to his brother's illness, and served in that position for about 35 years. Herrick made many important contributions to our knowledge of the nervous system. He was author of 5 editions of I*ntroduction to Neurology*, of *Laboratory Outline of Neurology*, and of the widely respected *The Brain of The Tiger Salamander, Ambystoma tigrinum*. He also wrote books of general interest such as *The Thinking Machine*, *The Evolution of Human Nature*, and others. Herrick was a giant in the field of comparative neuroanatomy.

Ross G. Harrison



(b. 13 January 1870; d. 30 September 1959) made one of the most important scientific contributions of the 20th century with his refinement of methods to successfully culture, and observe, developing neurons over time. This work, done between 1906 and 1908, definitively proved that axons were outgrowths of the neuron cell body. This work resulted in his nomination for the Nobel Prize in 1917 (not awarded) and a "special" consideration for the prize in 1933 (not awarded). Harrison was co-founder of the *Journal of Experimental Zoology* and its managing editor for 43 years. He received numerous accolades, including 11 honorary doctorate degrees, and was President of the AAA from 1911 to 1913.

Florence R. Sabin



(b. 9 November 1871; d. 3 October 1953) was elected as the first woman president of the AAA. Sabin was a medical scientist with a passion for spelunking and a pioneer for women in science. She was the first woman to hold a full professorship at Johns Hopkins School of Medicine, the first woman elected to the National Academy of Sciences, and the first woman to head a department at the Rockefeller Institute for Medical Research. Her research focused on the lymphatic system, blood vessels and cells, and tuberculosis. In her retirement years, she pursued a second career as a public health activist in Colorado, and in 1951 received a Lasker Award for this work.

Edward A. Spitzka

(b. 17 June 1876; d. 4 September 1922), during his comparatively short life, made notable contributions to the field of anatomy. During his last year as a student at Columbia University (MD, 1902), Spitzka conducted the autopsy on the brain of Leon Czolgosz, the assassin of President McKinley. This reflected a lifelong interest in brain anatomy and its possible relationship to asocial/criminal behavior. In 1906, Spitzka became Professor and Chair of General and Descriptive Anatomy at Thomas Jefferson University. Soon thereafter, he became an editor of the American Edition of *Gray's Anatomy*; co-editor in 1908, sole editor from 1910 until 1913.

Stephen Walter Ranson

(b. 28 August 1880; d. 30 August 1942) had an early interest in psychology but migrated to neuroanatomy (PhD, 1905) and neurology (MD, 1907). After a brief stint in medical practice, he embarked on a notable career in research, administration, and scholarship. His notable scientific papers covered most aspects of the nervous system including: the hypothalamus, basal nuclei, cerebellum, vasomotor systems, midbrain, nerve regeneration, and circuits controlling reflexes. The widespread use of his text, *The Anatomy of the Nervous System,* which he shepherded through 7 editions, is a tribute to his efforts in anatomy education. He also served as President of the AAA from 1938-1940.

J.C. Boileau Grant

(b. 6 February 1886; d. 14 August 1973) was a world renowned Canadian anatomist. His books: *A Method of Anatomy, Descriptive and Deductive; Atlas of Anatomy;* and *Dissector,* made an indelible impression on the teaching of anatomy throughout the world. His knowledge of anatomical facts was encyclopedic and he enjoyed sharing his knowledge with others. He prepared dissections which were available in his museum to students and residents. He endeavored (in his words) to bring up generations of surgeons who knew exactly what they were doing once an operation had begun. He was elected to membership of AAA in 1920 and served as Vice President from 1950 to 1952.

Edward Allen Boyden

(b. 20 March 1886; d. 27 October 1976) was a beloved teacher and respected researcher. Boyden received his masters degree (1911) and his PhD (1916) from Harvard University. He was the first to demonstrate the differences in the bronchopulmonary segments in humans and he elucidated some mechanisms of the gall bladder. Boyden also did early research in embryology, explaining agenesis of the kidney and other workings of the urogenital system. He held editorial positions with many publications, including the *Anatomical Record* (1928-1948) and *Diseases of the Chest* (1962-1968). Boyden was also the first recipient of AAA's prestigious Henry Gray Award in 1970 for scientific achievement.

Olof Larsell

(b. 13 March 1886; d. 8 April 1964) was born in Rättvik Sweden but came to the United States in 1891. After summer courses under C. J. Herrick at Chicago, Larsell embraced comparative neurology. In 1920, he initiated an exhaustive series of studies on the development and morphology of the cerebellum. Over three decades Larsell established a terminology for the cerebellum that became universally accepted; definitive papers appeared in 1948, 1952, and 1954. His landmark 3 volume set, *The Comparative Anatomy and Histology of the Cerebellum*, was published after his death. He also authored 2 editions of *Anatomy of the Nervous System* and the *Text Book of Neuroanatomy and the Sense Organs*.

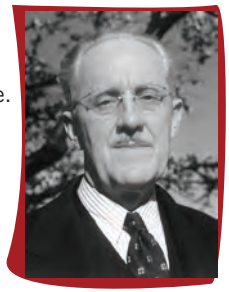
Elizabeth C. Crosby

(b. 25 October 1888; d. 28 July 1983) was arguably the most well-known American neuroanatomist in the middle 50 years of the 20th century. She published her first book, *Laboratory Outline of Neurology* in 1918 (with C. J. Herrick) and her last book, *Comparative Correlative Neuroanatomy of The Vertebrate Telencephalon* in 1982: a period of productivity spanning 64 years. *The Comparative Anatomy of The Nervous System of Vertebrates, Including Man* (1936) established Crosby as a leading authority on brain anatomy. This effort was followed by her highly respected textbook, *Correlative Anatomy of The Nervous System* (1962) and by three editions of *Correlative Neurosurgery*.

Bradley M. Patten

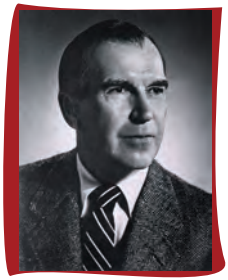
(b. 14 June 1889; d. 8 November 1971) earned a PhD in physiology from Harvard in 1914. He taught at Harvard University, Western Reserve Medical School, and the University of Michigan. He chaired the Anatomy Department at the University of Michigan for 22 years. He was a American Association for the Advancement of Science fellow, and a member of the American Society of Zoologists and of the American Association of Anatomists. Patten was most widely known for his several popular textbooks: *Human Embryology* (1946), *Foundations of Embryology* (1958), *Embryology of the Pig* (1925), and *Early Embryology of the Chick* (1920).

Leslie Brainerd Arey



(b. 15 February 1891; d. 23 March 1988) was a native of Camden, Maine. He joined the faculty at Northwestern University Medical School in 1915 and taught there for 72 years, one of the longest tenures of any medical school professor in history. His *Textbook of Embryology* was published in 1917 and *Development Anatomy* in 1924, both are classics in the field. Arey was chairman of the White House Committee on Child Health and Protection, President of the American Association of Anatomists, and the recipient of the Henry Gray Award for 1974. Fourteen years after his retirement, he received the Northwestern University Medical School Teaching Award. One of the great joys of his life, he said, was "serving as a laboratory instructor and therefore working directly with the students."

Barry Joseph Anson



(b. 21 March 1894; d. 13 November 1974) received his masters and medical degree from Harvard in 1923 and 1926, respectively. He started teaching at Northwestern University Medical School in 1926 and became the Chair of the Anatomy Department in 1956. After retiring from his professorship there, he became Research Professor in the Department of Otology and Maxillofacial Surgery at the College of Medicine of the University of Iowa in 1962. Anson was a member of many professional societies and authored or co-authored several books including *An Atlas of Human Anatomy, The Temporal Bone and Ear*, and *Surgical Anatomy*. He also spent twenty years as editor for the *Quarterly Bulletin of Northwestern University Medical School* and contributed to numerous other publications.

Oscar V. Batson

(b. 10 November 1894; d. 11 November 1979), an otologist and former student of Eliot Clark, was most famous for research on the cranial and vertebral venous systems. He injected a plastic material into the venous system and corroded the tissue to form a cast of a network of veins that he believed functioned to drain blood from the head and neck. Batson did similar work with the veins in the spinal cord and demonstrated that the cast was similar to the typical spread of cancer from the spine and skull from the pelvis and thorax. His work also improved upon current methodologies, while his appreciation of modern technology enhanced his teaching.

Harland Winfield Mossman

(b. 07 May 1898; d. 05 December 1991) was an authority on fetal membranes and comparative reproduction. His extensive working specimen collection is available to investigators at the University of Wisconsin Zoological Museum. He was the first to describe "counter current" mechanisms in a circulatory system and show its efficiency in the exchange of nutrients and waste between mother and fetus. With W. J. Hamilton and J. D. Boyd he co-authored the most successful text in human embryology of its time. He was honored with a Festschrift Volume of the American Journal of Anatomy in 1978 and received the AAA Henry Gray Award in 1987. In retirement he wrote two influential books, *Comparative Morphology of the Mammalian Ovary* and *Comparative Morphogenesis of Vertebrate Fetal Membranes*.

Charles Mayo Goss

(b. 16 February 1899; d. March 1981) began his career at his former school, Yale University, in 1926. The numerous books he edited include the renowned *Gray's Anatomy*. Goss was the first to describe the beginning of heart contraction in a live mammalian embryo in 1938, and he presented the motion picture *The Heart in Living Rat Embryos* in 1961 at an AAA annual meeting. He was associate editor of the 8th, 9th, and 10th editions of *Bailey's Histology,* as well as managing editor of the *Anatomical Record* for 20 years, from 1948 until 1968.

Louis B. Flexner

(b. 7 January 1902; d. 29 March 1996), who founded the Institute of Neurological Sciences at the University of Pennsylvania, received his medical degree from Johns Hopkins University in 1927. Flexner spent much of his career researching memory and learning, as well as mammalian development. A good deal of Flexner's research was completed with his wife, Josefa. He proved that protein synthesis was connected to memory formation, and that the brain produces proteins at a faster rate than scientists believed at the time. Flexner won the Weinstein Award in 1957 for his work on central nervous system development. He served as Chair of the Department of Anatomy at the University of Pennsylvania from 1951 to 1967. The institution awarded him an honorary Doctor of Laws degree in 1974 and established a lectureship in his honor.

Frank H.J. Figge

(b. 23 December 1904; d. 25 October 1973) received his PhD from the University of Maryland in 1934 and spent most of his professional career there, contributing as Chair of the Anatomy Department from 1955 to 1971. He had a wide range of research interests that culminated in over 250 research papers on cancer, body fluids, porphyrins, and other topics. He authored *Programmed Guide to the Study and Dissection of the Human Body* in 1968 and was the American editor of Sobotta-Figge *Atlas of Human Anatomy* until his death. Figge was a member of various professional associations, such as the American Association of Anatomists, American Academy of Neurology, and the Histochemical Society.

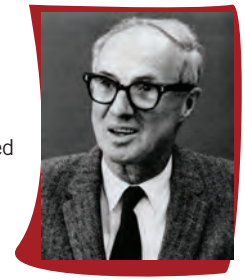
Melvin H. Knisely

(b. 17 June 1904; d. 30 March 1975) pioneered in vivo microscopic studies of the microcirculation of blood in tissues and organs. While at the University of Chicago, he discovered the pathological clumping ("sludging") of red and white blood cells in malaria and other diseases. For this and the development of the fused quartz rod for transilluminating living organs *in situ*, he was nominated in 1948 for the Nobel Prize by his postdoctoral mentor, August Krogh, himself a recipient of the 1920 Nobel Prize in Physiology and Medicine. Also, in 1948, Knisely became Professor and Chairman of Anatomy at the Medical College of South Carolina, a position he held until 1969. During these years, his most cited research focused on the transport of oxygen to tissue and the effect of alcohol on brain cell viability.

Russell T. Woodburne

(b. 2 November 1904; d. 11 April 2001) was one of the mainstays in the field of gross anatomy during the mid-1900s. In addition to teaching several generations of medical students, he was the author of *Essentials of Human Anatomy*, one of the first textbooks to use a regional approach, as well as *A Guide to Dissection in Gross Anatomy.* He spent his entire academic career at the University of Michigan and was Chair of the Department of Anatomy from 1958 to 1973. He was active in the American Association of Anatomists and served as Secretary-Treasurer (1964-1972) and President (1974-1975). His interest in anatomical terminology led to his membership in the International Anatomical Nomenclature Committee from 1960-1990.

Ernst Scharrer



(b. 1 August 1905; d. 29 April 1965) worked with his wife, Berta, to establish the field of neuroendocrinology. His work focused on neurosecretion in vertebrates, with complementary findings to his wife's work on invertebrates. Scharrer received a PhD in zoology in 1927 and a medical degree in 1928 from the University of Munich. He noted secretory droplets in nerve cells as early as 1928, but the concept of neurosecretion was not quickly accepted. After moving to the United States in 1937, Scharrer held positions at many esteemed institutions including the Rockefeller Institute. He was the author or co-author of 92 publications, including *Neuroendocrinology* (1963).

W. Henry Hollinshead

(b. 17 June 1906; d. September 1986), received his BS, MS, and PhD degrees from Vanderbilt University and published several books on anatomy that remain staples in education today. He was the head of the Anatomy Department that he established at the Mayo Graduate School of Medicine, where he trained many future surgeons, until he retired in 1971. His experiments spanned several fields, including those of embryology, phyisiology, and neuroanatomy. Hollinshead also authored books that are still used for instruction today, including *Functional Anatomy of the Limbs and Back* (1951), the three-volume *Anatomy for Surgeons* (1954-1958), and *Hollinshead's Textbook of Anatomy* (1962).

Wendell J.S. Krieg

(b. 13 April 1906; d. 9 September 1997) made numerous contributions to the field of neuroanatomy through his research on, for example, the cerebral cortex, diencephalon, and hypothalamus, his remarkable three-dimensional drawings of internal brain connections, and his founding of the Cajal Club and endowment to that organization. His scientific papers elucidated connections within the brain using the best methods available at the time and his enthusiastic participation in AAA meetings were memorable. His text, *Functional Neuroanatomy,* appeared in three editions (1942, 1953, 1966) and contained drawings of unequaled clarity and detail. Krieg published fourteen other books on a variety of neuroanatomical, and other, topics.

Berta V. Scharrer

(b. 1 December 1906; d. 23 July 1995), a German biologist, worked extensively developing the concept of neurosecretion with her husband Ernst. The two eventually established neuroendocrinology as a discipline, with Berta's focus being on invertebrates. Her work continued in the United States after leaving Germany because of the Nazi regime. Berta's work with cockroaches at Western Reserve University proved production, transport, and secretion of hormones by cells of the insect nervous system. Ernst found complementary results in vertebrates, and their work was much more widely accepted by the 1950s. After Ernst's passing in 1965, Berta went on to become the second woman president of AAA, receive honorary degrees from eleven institutions, and continue research until her death in 1995.

Frederick A. Mettler

(b. 13 June 1907; d. 22 May 1984) received his PhD from Cornell and his MD from the Medical College of Georgia. With this dual training, Mettler made numerous significant contributions that bridged the fields of anatomy, physiology, and neurology. His studies elucidated the structure and function of the basal nuclei, developmental defects, issues of psychosurgery, cerebral vascular territories, medico-legal matters, and many others. He served on several editorial boards including that of *The Journal of Comparative Neurology,* and was well known as the author of two editions of *Neuroanatomy*, a book that contained outstanding illustrations of brain anatomy.

Murray L. Barr

(b. 20 June 1908; d. 4 May 1995), a world renowned neuro-anatomist, together with E.Bertram discovered the sex chromatin (Barr body) that distinguishes cells of females from those of males and the causes of defects such as the Klinefelter syndrome (47, XXY). Barr received the highest award of the Canadian Medical Association, the F.N.G. Star Award. He also received the Officer of the Order of Canada, the most prestigious honor a Canadian can receive. His other prestigious awards include: the Maurice Goldblatt Cytology Award; the Award of Marit of the Gardener Foundation; the Joseph P. Kennedy Jr. Foundation, given to him by President John Kennedy. He was also inducted into the Canadian Medical Hall of Fame.

Clement A. Fox

(b. 15 April 1908; d. 9 June 1979) began his career at Marquette University. From 1965–1975 he served as Chairman of Anatomy at Wayne State University. His research was based on his outstanding Golgi collection of the monkey brain, as well as transmission electron microscopy. His insightful observations provided a new understanding of the organization of the cerebellum and basal ganglia. He served on the editorial board of the *Journal of Comparative Neurology* from 1966-1973. A 1976 issue of this Journal was dedicated to Dr. Fox citing his academic service and contributions to neuroanatomy. One of his axioms regarding scientific investigation was "it is easy to make new discoveries if the literature is ignored."

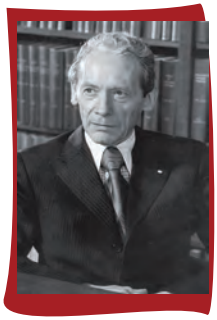
Rita Levi-Montalcini

(b. 22 April 1909; d. 30 December 2012), Italian neuroscientist, pursued an education and graduated summa cum laude from University of Turin medical school in 1936 despite some initial opposition from her father. Levi-Montalcini studied chick embryos in her home before moving to Washington University to work with Dr. Viktor Hamburger. Her early work was largely disregarded at first, but she and Stanley Cohen won the Nobel Prize in 1986 for her discovery and his isolation of nerve growth factor. Levi-Montalcini also won the National Medal of Science in 1987 and started a foundation for science education for young women in 1992.

David Bodian

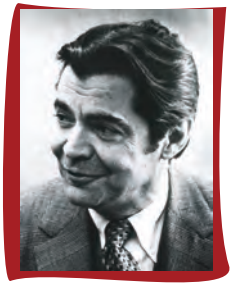
(b. 15 May 1910; d. 18 September 1992), working with Howard Howe at Johns Hopkins University, found that there were three types of the polio virus. He also discovered that immunity from one type did not prevent a second infection – an effective vaccine would have to include antibodies that recognized each type. Bodian's team developed an early vaccine for polio that was effective in monkeys, and one that raised antibody levels in children. He was inducted into the Polio Hall of Fame in 1958 and the Hopkins School of Hygiene and Public Health named him one of the 75 Heroes of Public Health in 1991. Additionally, Bodian contributed to the understanding of nerve structure with the development of a stain for nerve fibers and nerve endings that was also useful for visualizing motor neurons in his polio research.

Charles P. Leblond



(b. 5 February 1910; d. 10 April 2007) was a world renowned Canadian anatomist and cell biologist. He developed autoradiography and showed how cells continuously renew themselves, regardless of age. Leblond and Yves Clermont deciphered how spermatogonia gave rise to spermatocytes and then differentiated into mature sperm cells in a cycle. The paper describing this research was the first one in which nests of cells dividing in an adult organ was designated as "stem cells." Leblond received six Honorary Degrees of Doctor of Sciences and many other honors, notably: Gairdner Foundation Award; Fellow of the Royal Society of London; Companion of the Order of Canada and the AAA Henry Gray Award. He was President of AAA from 1962 to 1963.

George Emil Palade



(b. 19 November 1912; d. 7 October 2008), who is considered one of the most influential cell biologists, received his medical degree in 1940 from the Carol Davila School of Medicine and began working at the Rockefeller Institute in 1946 after emigrating from Romania. Palade received the Nobel Prize for Physiology or Medicine in 1974 for his important work on cell protein secretion, using an experimental technique called the pulse chase analysis to verify the secretory pathway. He was the first to discover ribosomes on the endoplasmic reticulum and he helped perfect methods for electron microscopy as well as cell fractionation. Palade also won the Albert Lasker Award for Basic Medical Research in 1966 and the National Medal of Science in 1986 for his work in cell biology.

Raymond (Ray) C. Truex

(b. 11 December 1911; d. 6 February 1980) had an excellent upbringing in anatomy (PhD, University of Minnesota mentored by A. T. Rasmussen) and a distinguished career including service as President of the AAA. He made enduring contributions to his chosen field. His research on the cardiovascular system included seminal observations on the anatomy of the sinoatrial and atrioventricular nodes, cardiac circulation, and visceromotor innervation of the heart, which gained him an international reputation. He authored *Detailed Atlas of the Head and Neck* and *Human Cross Section of Anatomy*. As editor of the 1959, 1964, and 1969 editions of *Strong and Elwyn's Human Neuroanatomy,* Truex influenced entire generations of young neuroanatomists.

Keith R. Porter

(b. 11 June 1912; d. 2 May 1997) was the first cell biologist to photograph tissues with an electron microscope, providing detail that could not be achieved with a light microscope. Porter went to the Rockefeller Institute a year after receiving his PhD from Harvard University in 1938. While working with Albert Claude, Porter started his research with the electron microscope in 1944. He perfected the technique for using the microscope to examine whole cells. Porter also designed the ultramicrotome with Joseph Blum in an effort to produce sections of cells that were thin enough for use with the electron microscope. Later in his career, Porter studied the organization of cell structures. He also helped in founding the Tissue Culture Association (1946), and the *Journal of Biophysical and Biochemical Cytology* (1955) at the Rockefeller Press.

Don Wayne Fawcett

(b. 14 March 1917; d. 17 May 2009) served as a Captain and a battalion surgeon in World War II. When he returned, his career path shifted from surgery to research. Much of Fawcett's work improved upon the techniques in electron microscopy. He was the first to describe human spermatozoa in detail. Working with Keith Porter and George Palade at the Rockefeller Institute, Fawcett confirmed the 9+2 pattern of microtubule structure in metazoan cilia. He co-founded the American Society for Cell Biology in 1960, in addition to serving on the editorial board for nine journals and receiving nine honorary degrees.

Sanford L. Palay

(b. 23 September 1918; d. 5 August 2002) took a modified route to a notable scientific career by studying medicine (MD, 1943), and then turning to neuroscience and working with giants in the field. Palay was widely recognized for his outstanding electron microscopy of nerve tissues such as, secretory granules, neurons, synapses, neuroglia and ependyma, neuro-immunocytochemistry, and for elucidating the structure of complex tissues such as the cerebellar cortex. He was senior author of the definitive book *Cerebellar Cortex, Cytology and Organization,* and co-author of 3 editions of the highly regarded *The Fine Structure of the Nervous System.* Palay also served as President of the AAA from 1980 to 1981.

John V. Basmajian

(b. 21 June 1921; d. 18 March 2008) was a renowned anatomist, scientist and clinician who published 350 scientific papers on kinesiology, biomechanics and clinical electromyography. He also authored or edited 59 books on academic and clinical anatomy. His academic career was spent at the University of Toronto, Queens University and McMasters University in Canada; and at Emory University in the United States. He established the AAA Basmajian Award to assist young faculty members in their early research careers. He served as AAA President from 1985-1986 and received the AAA Henry Gray Award in 1991. He was a recipient of the highest awards given a private citizen in Canada, The Order of Canada and The Order of Ontario.

Malcolm B. Carpenter

(b. 7 July 1921; d. 25 June 1999) received his MD degree in 1947 and initially followed a clinical career in neurology before turning to basic neuroscience with his appointment to Columbia in 1953. His scientific contributions were numerous and notable, and were concerned with topics as diverse as motor systems (basal nuclei, cerebellum, red nucleus), vascular patterns, eye movements, vestibular system, the diencephalon, and the subthalamus. He is widely known as co-author/ author of 4 editions of *Human Neuroanatomy* (formerly Strong and Elwyn's Human Neuroanatomy), for 4 editions of his *Core Text of Neuroanatomy,* and as co-author of *Cerebellum of The Rhesus Monkey.*

Jan Langman

(b. 21 October 1923; d. 2 October 1981) began his anatomy career under the direction of M.W. Woerdeman in Amsterdam and later became known for his dramatic presentations in anatomy lectures at McGill University where he established a course in embryology. He also began his research career using autoradiography to study neuron differentiation during embryogenesis. At McGill, he published his book, *Medical Embryology,* which introduced a clinical approach to teaching this subject and revolutionized how embryology is presented in medical education. The book became a "best seller" and lives on in its 12th edition with translations into 12 languages. In 1964, Langman became Professor and Chair of Anatomy at the University of Virginia where he developed a department that excelled at research and teaching.

Aaron J. Ladman

(b. 3 July 1925), in addition to his scientific contributions and serving as the founding Chairman of Anatomy at the new School of Medicine at the University of New Mexico, has the singular distinction as the longest serving Editor of *The Anatomical Record*. Ladman received his PhD from Indiana University in Bloomington (1952) and held faculty positions at Harvard University (1952-1961) and at the University of Tennessee/Memphis (1961-1964). His research was centered in the field of cell biology as broadly defined. In 1968 he was appointed Managing Editor of the *AR*, a position he held for 30 years with distinction and commitment to the AAA.

Keith L. Moore

(b. 5 October 1925) has had a worldwide impact on anatomy education of medical and dental students through his textbooks, which have been translated into several languages. These texts include: *Clinically Oriented Anatomy* 7th ed., *Essential Clinical Anatomy* 4th ed., *The Developing Human* 9th ed., and *Before We Are Born* 8th ed. He has published 60 scientific papers, including research on the sex chromatin that led to his development of a buccal smear test for the determination of gender in intersexuality. He has received many fellowships and honors, some of which are: Fellow of AAA, Fellow of the Royal Society of Medicine; Henry Gray/Elsevier Distinguished Educator Award; Queen Elizabeth II Diamond Jubilee Medal, and Degree of Doctor of Science.

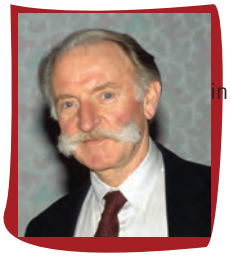
Elizabeth Dexter Hay

(b. 2 April 1927; d. 20 August 2007) received her medical degree from Johns Hopkins University School of Medicine in 1952 as one of four women in her class. While she had achievements in developmental and cell biology, she is most widely recognized for her work on the extracellular matrix. Hay was the first biologist to disprove the idea that the matrix was simply rigid structural support for the cell and to demonstrate how the extracellular matrix contributes to cell-to-cell communication, cell repair, and more. She was the first woman to head a preclinical department at Harvard Medical School, as well as the first woman president of the American Society of Cell Biology and the Society for Developmental Biology. Hay served as President of the AAA from 1981 to 1982.

John E. Pauly

(b. 1927) chaired the Department of Anatomy at the University of Arkansas for Medical Sciences from 1967 to 1983. He was also chair of the Physiology and Biophysics Department from 1977 to 1980, as well as vice chancellor of academic affairs from 1983 to 1992. Pauly was a dedicated educator, teaching gross anatomy all through his career. His research focus was chronobiology, in which he made significant strides in understanding biological rhythms. Pauly co-authored the textbooks Human Microanatomy, Histology and Human Microanatomy, the Advances in Chronobiology series, and edited The American Association of Anatomists, 1888-1987 to celebrate AAA's 100th anniversary. UAMS named the Pauly Auditorium in his honor after he retired in 1995.

Alan Peters



(b. 6 December 1929) earned his PhD at Bristol University in 1954. After his military service, he entered a postdoctoral fellowship with George Romanes at Edinburgh University, followed by a lectureship there in anatomy. In his research, Peters used electron microscopy to study the structure and organization of neurons. He was also the first to describe the structure of the myelin sheath in the central nervous system. He co-authored the textbook The Fine Structure of the Nervous System (1991) and The Cerebral Cortex (1984-1999) series. Peters is a recipient of the Krieg Cortical Discoverer Award (1990), the Henry Gray Award (1998), and the Sanford L. Palay Award (2004).

Carmine D. Clemente

(b. 29 April 1928) earned his PhD at the University of Pennsylvania and began working at the UCLA School of Medicine in 1952. Much of his research centered on regeneration of neural tissue, but Clemente has also studied neural control of behavior. His 1973 anatomy textbook, Anatomy: A Regional Atlas of the Human Body, is still widely used today, as is his 1985 edit of Gray's Anatomy. He also created a series of short films on dissection with UCLA and has published over 200 papers. Clemente's research and teaching have earned him many awards, including the 1993 Henry Gray Award, the 1996 UCLA Award for Excellence in Medical Education, the 2006 Glaser Award.

Robert D. Yates

(b. 28 February 1931) is a cell biologist who effectively used electron microscopy to advance our knowledge of the adrenal gland, the chromaffin system, paraganglia, carotid body, cardiac muscle, and the structure of arterial walls under conditions of modified blood pressure. His studies on adrenal cells were the first using electron microscopic methods and opened the door for further studies concerning their secretory nature. His service to the AAA has been exemplary; he has served as Secretary-Treasurer, as President from 1999 to 2001, and in a variety of other areas, and for this received the A.J. Ladman Exemplary Service Award in 2003. In addition, he was senior editor of the book Male Reproductive System.

William D. Willis

(b. 1934) received his MD in 1960 from the University of Texas Southwestern Medical School and his PhD in 1963 from the Australian National University. Willis has contributed a great deal to our understanding of pain mechanisms. Willis authored three editions of *Medical Neurobiology,* and he has won numerous research awards including the Bristol-Myers Squibb Award for Distinguished Achievement in Pain Research (1993) and the first ever Purdue Prize for Pain Research at the Spring Pain Research Conference (2002).

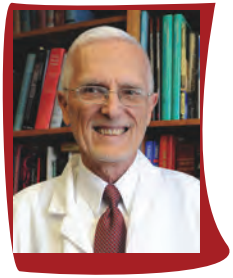
Henry J. Ralston, III

(b. 1935), Professor of Anatomy and faculty in the Neuroscience Graduate Program at UCSF. His research focuses on the organization of the neural networks that serve somatic sensation, including pain, and on neurological changes after nerve injury. Ralston was elected Fellow of the American Association for the Advancement of Science in 2006 and has served on the editorial board for the *Annals of Neurology*. A UCSF University Service Award recipient for 1998/99, he was also honored with the Legacy Award by the UCSF Medical School Class of 1980. Ralston served as President of the American Association of Anatomists from 1987 to 1988.

Charles E. Slonecker

(b. 30 November 1938), received his clinical and scientific training at the University of Washington and completed a postdoctoral research year in the Pathology Institute at the University of Bern in Switzerland in 1967-1968. He was appointed an assistant professor of Anatomy at the University of British Columbia in 1968 and served his entire academic career at UBC until his retirement in 2003. He served as Professor and Department Head in Anatomy from 1981 until 1992 and was Director of University Relations in the UBC President's Office from 1992-2003 and Acting Vice President for External Affairs 1998-1991 and 2000-2001. Additionally, he served as co-editor of *Grant's Method of Anatomy*, 11th edition with J.V. Basmajian. He is a recipient of the Faculty of Medicine and the University's highest teaching awards at UBC. He also received the Queen's Diamond Jubilee Medal for his academic and public service in Canada. Slonecker has served as President of the AAA from 1994 to 1995.

Duane E. Haines



(b. 4 May 1943) provided experimental proof that cerebellar corticonuclear fibers arise from mediolaterally and rostrocaudally oriented cortical zones that project in a specific topographic pattern to the cerebellar nuclei. With his colleague Dietrichs, he also showed that there are extensive interconnections between cerebellar and hypothalamic structures that suggested a cerebellar influence over visceromotor function. He authored *Neuroanatomy, An Atlas of Structures, Sections and Systems* (8 editions), the text *Fundamental Neuroscience for Basic and Clinical Applications* (4 editions), two Q&A books for medical students, and is co-author of *Atlas of Histology with Functional & Clinical Correlations*. He also served as Secretary-Treasurer of the AAA.

Richard L. Drake

(b. 25 February 1950), Director of Anatomy and Professor of Surgery Cleveland Clinic Lerner College of Medicine of CWRU, is known as a teacher, educational researcher, author and leader. A master teacher, he has awards from students, institutions, and the AAA, receiving the 2011 Henry Gray/Elsevier Distinguished Educator Award. An accomplished researcher, he gives talks on educational topics at national and international meetings, and has published numerous peer-reviewed papers and book chapters. He is one of the authors of *Gray's Anatomy for Students, Gray's Basic Anatomy, Gray's Atlas of Anatomy* and *Gray's Anatomy for Students Flash Cards*. His current leadership roles include Secretary/Treasurer of AAA, Treasurer of the International Federation of Associations of Anatomists, President-elect of the Association of Anatomy, Cell Biology and Neurobiology Chairpersons, and Co-Editor-in-Chief of *Anatomical Sciences Education*.

Acknowledgements

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