Floyd Bloom: The Next Editor-in-Chief of *Science*

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On 1 May 1995, Floyd Bloom will replace Dan Koshland as the editor-in-chief of *Science*. This is a bittersweet event. We lose a man who has guided the journal through what has been a very successful and visionary decade. However, we are fortunate now to have as the new editor another scientist and administrator of extraordinary abilities.

The main credential that Floyd Bloom brings to the editorship is his quality as a scientist. Bloom's entry into science had a rather inauspicious beginning in that it did not begin with the usual chemistry set in the basement. His aptitude test in high school revealed that he should be in journalism, publishing, or advertising, and that he should definitely stay away from the hard sciences. So he went home and told this to his father, who basically said that was all well and good but that the first thing Floyd had to do was to graduate from medical school and after that he could do anything he wanted to. This parental guidance was not altogether unexpected by the young Bloom because he grew up working in his father's drug store in Minneapolis and thus was already oriented toward doctors and medications. In reality he had no great desire to become a doctor, but he did desire to fulfill his father's wishes. So, in 1954 he was off to pre-med studies at Southern Methodist University, where his teachers soon found that he was talented in both inorganic and organic chemistry.

Accordingly, the professor of organic chemistry, Harold Jesky, became Floyd's champion and was able to introduce him to the traveling registrar who interviewed prospective students for Washington University Medical School in St. Louis. Because of his success in chemistry, Floyd obtained interviews and was accepted into medical school. However, he still showed no flair for research and wanted to be an obstetrician. Given the Floyd Bloom that we know today, we would expect him to do well in all his courses, but that was not quite the case. At that time Washington University did not give grades; performance was ranked as upper, middle, or lower. Floyd received uppers in everything except physiology, where his curiosity may have interfered with his class achievement because he had become wrapped up in what was going on at that time concerning ions and the transmission of nerve impulses. Nevertheless, his teacher in physiology, Gordon Schoepfle, sensing that there was much to the young Bloom, invited him to come to his laboratory for the summer on a National Institutes of Health student fellowship. In the process of working with his own hands, Floyd began to get an appreciation for science and eventually was to produce a thesis under the direction of Oliver Lowry on the kinetics of the procaine effect on single frog axons, a study combining physiology and pharmacology. After graduation, he did an internship and a year of residency in medicine at Barnes Hospital in St. Louis and then, on the basis of his student research, was accepted as a research associate at the National Institute of Mental Health (NIMH) St. Elizabeth's Hospital Clinical Neuropharmacology Research Center. This research project was his first encounter with brain research, which soon became his passion and remains so even now.

It was an exciting time at NIMH in the early 1960s, and Bloom was carrying out ground-breaking studies on the mechanism of the antihypertensive effects of the then important drug reserpine. Although it may seem obvious today, 30 years ago it was quite puzzling as to how a drug that works in the brain could have effects on peripheral vascular resistance. It turned out that the effects of reserpine were mediated through brain norepinephrine and serotonin, but there was little knowledge of the way that these and other small molecules controlled brain functions. These studies led to Bloom's first article under the modest title, "The Pharmacology of Individual Neurons" (*1*). After 2 years at NIMH, Bloom received a fellowship to work with Russell Barnett in the Department of Anatomy at Yale University, where they devised cytochemical methods to localize acetylcholinesterase, at the electron microscopic level, in the electroplaque of the electric eel (*2*). These early studies were the first in which structural techniques were used to obtain quantitative information about neurotransmitters in the brain. Already at this time, it was possible to pick up the lifelong theme of Bloom's research, which was aimed at understanding the chemical basis by which the anatomical connections in the brain function.

After 4 years at Yale, Floyd returned to NIMH in 1968, where he was appointed chief of the laboratory of neuropharmacology at St. Elizabeth's Hospital. Together with George Siggins, who was his first postdoc

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toral fellow (and is still with him), and Barry Hoffer, who had done his thesis at Rochester on the developing cerebellum, he carried out the now classical studies on the locus ceruleus and the norepinephrine-containing afferents to the rat cerebellum (3). These studies, which began in the late 1960s and continued through the early 1970s, represent a milestone in mapping out chemical pathways in the brain.

In 1975 Bloom and his group moved to the Salk Institute in La Jolla, where he became the director of the Arthur V. Davis Center for Behavioral Neurobiology. While waiting for his laboratory to be completed, Floyd and his senior staff were offered a share of the very limited laboratory space in the Guillemin laboratory. These were the days of the exploding discoveries of the small polypeptides isolated and characterized throughout the central nervous system. Floyd's expertise in immunocytochemistry was immediately of great use and led to the observation that the distribution of the enkephalins and that of the endorphins were so different throughout the brain that the peptides, even though they shared common amino acid sequences, had to come from different precursors (4). Neurons containing β-endorphin in rat brain exist separately from those containing enkephalins. These studies were amply confirmed and proved by the subsequent cloning studies of Numa and Nakanishi and Goldstein and their colleagues (5). Floyd's work also demonstrated in vivo that stress stimulates concomitant secretion of adrenocorticotropic hormone and β-endorphin. While at Salk, Floyd initiated several ambitious research programs in neuropsychopharmacology, investigating with George Koob (who also is still with him) the behavioral effects of these novel neuropeptides and the mechanisms of addictive behavior to alcohol.

At the Scripps Research Institute since 1983, where he is now the chairman of the Department of Neuropharmacology, Floyd began, with Greg Sutcliffe, to use the techniques of molecular biology to study brain proteins and processes (6). Making more and more use of all tools of molecular biology, Bloom has increasingly turned his attention to the present-day complex problems of human neurophysiology and neuropathology, including drug addiction, the chemical basis of alcoholism, and the dementia associated with HIV infection (7). He and his group have recently made the proposal that the nucleus accumbens seems to be the only locus associated with critical reinforcement, as well as adaptation to continuous exposure to any addictive drug, each of these making use of different neuromediators or receptors on the same population of neurons (8).

Bloom brings many personal qualities and attitudes to the journal and these will ensure his success as an editor. He is a man of extraordinary goodwill, with a passion to support all that is good about the scientific enterprise. Those who know him well often remark about the energy that he is willing to expend in the service of science, whether it be on a committee of the National Academy of Sciences or in a speech to a group of young students who are contemplating a career in science. He is a compelling speaker with a remarkable ability to communicate scientific results to experts and layman alike. He is fair. This is not to say that he is a pushover but, rather, that he bases his decisions on evidence rather than prejudice. He is not only encyclopedic in his own field but also current on a wide range of concepts and results in areas quite distant from neuroscience. Perhaps this stems from his belief in an interdisciplinary approach to scientific issues. There is, therefore, no need to worry that this or that field will not fare well in the journal because Bloom does not appreciate the area. His tastes are varied. He is interested in ideas and not the stature of the individual or the discipline whence they come. Bloom's people skills are legendary. Once into the Bloom orbit, one remains there whether as a friend, colleague, or collaborator. The main reason for this is that he gives at least as much as he gets to any scientific relationship and one remains secure because of his overriding sense of fairness. Finally, he has the all too rare trait that he honors his commitments and more than keeps his part of the bargain. The contributors to *Science* can be sure that if he says he is going to look into a matter or think about their paper it will be done. The outcome may not be what was wished for but the judgment will be reasoned.

The younger members of the scientific community should rejoice in the Bloom appointment. He has often remarked that he feels obligated to ensure their well being. But his interest in the young goes beyond the obvious issue that they will inherit the enterprise. They have hope and energy and reflect his own boundless enthusiasm.

As befits a scientist of Bloom's stature, he has received many honors and awards. He was elected to the National Academy of Sciences in 1977, served as chairman of the Neurobiology Section of the Academy from 1979–1983 and 1985–86, and was Secretary of Class II from 1986–1989. He received the degree of Doctor of Science, honoris causae, from Hahnemann University, Philadelphia, in 1985 and the University of Rochester, New York, in 1985. He served on the Board of Directors of the American Association for the Advancement of Science, from 1985–1989, the Science Advisory Board of the MacArthur Foundation from 1982–1992, the Science Advisory Board of the DuPont Corporation from 1983–1990, and the Science Advisory Board of the Massachusetts General Hospital from 1984–1988. In 1989 he was elected a foreign Member of the Royal Swedish Academy of Sciences. He received both the Janssen Award in the Basic Sciences and the Pasarow Award in Neuropsychiatry in 1989. He is also a member of the National Academy of Medicine.

Bloom has been married since 1980 to Jody P. Corey, whom he had met 2 years earlier at a meeting of the Society for General Physiology at Woods Hole, Massachusetts. Already with a Ph.D. in neuroanatomy at that time, Jody went to medical school at the University of California, Irvine, and then to the University of California, San Diego (UCSD) and graduated from UCSD in 1986. She is now an assistant professor of neurosciences at UCSD and is chief of Outpatient Neurology of the UCSD Perlman Clinic. Floyd has two children, a daughter, Fl'nell, 33, and a son, Evan, 31. Fl'nell is a schoolteacher in Hawaii and has two sons. Evan is a photographer in San Diego.

At the Scripps Research Institute, Bloom now leads a department of 30 faculty members and more than 100 postdoctoral fellows and graduate students in 50,000 square feet of laboratory space devoted to that new type of neuropharmacology that started when he and his colleagues began to characterize genes specifically expressed in the brain. This has led to a multicenter international effort at brain mapping for all known brain-specific messages, or gene products; it is currently funded by NIH, the National Aeronautics and Space Administration, the U.S. Navy, and the European Community Human Science Frontier Program.

Like all successful scientists, Floyd Bloom is able to identify the basic principles at issue and to design and pursue experiments with the aim of using the knowledge to solve critical problems.

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