Eugene Braunwald, MD

Lawrence H. Cohn, MD

Eugene Braunwald, called “EB” (Figure 1), was born in Vienna, Austria, in 1929. His nearly idyllic early childhood was suddenly interrupted in 1938 by Nazi Germany’s annexation of Austria. After some harrowing experiences, he and his nuclear family fled Austria and came to London with literally only “their shirts on their backs.” When World War II began, EB and his younger brother were evacuated from London to live on a farm in northern England. He and his family later emigrated to New York in 1939.

EB entered the New York public school system and graduated as class valedictorian. He attended New York University, graduated magna cum laude, and went on to the New York University School of Medicine. He was the youngest and the last student to be admitted to his class, and he graduated in 1952 with the highest academic record in his class and received the student research award. He became engaged to a classmate, Nina Starr, whom he married the week before their graduation.

After 2 years of clinical training in medicine and cardiology at the Mount Sinai Hospital in New York, he served a postdoctoral research fellowship in the laboratory of Dr André Cournand, a professor at Columbia University considered by many to be the “father of cardiac catheterization” and winner of the Nobel Prize in Medicine or Physiology.

In 1955, EB continued his training in the intramural research program of the then National Heart Institute in Bethesda, Maryland. With the exception of a year as a senior medical resident at Johns Hopkins Hospital, he remained at the Institute until 1968. He was assigned increasing responsibilities, becoming chief of cardiology in 1961 and clinical director in 1966. His wife, Nina Starr Braunwald, became the first female cardiac surgeon and the first female member of The American Association for Thoracic Surgery.

In 1968, the Braunwald family (by then including 3 daughters) moved to La Jolla, California, where EB served as the founding chair of the Department of Medicine of the new University of California, San Diego School of Medicine. During his 4 years there, he established a strong

FIGURE 1. Eugene Braunwald, MD.

department and demonstrated that he was an innovative medical educator, administrator, and academic leader. He recruited 75 faculty members and established first-rate training programs for students, residents, and fellows. In 1972, the Braunwalds moved back to the East Coast when EB filled the post of Hersey Professor of the Theory and Practice of Medicine at Harvard Medical School, the oldest endowed medical chair at Harvard. He also became chair of the Department of Medicine and physician-in-chief of the Peter Bent Brigham (now the Brigham and Women’s) Hospital. Under EB’s leadership, the Department of Medicine flourished; he recruited outstanding physician-scientists and trained 2 generations of academics who in turn have exerted a major influence in academic medicine.

In 1996, EB became Chief Academic Officer and a founding trustee of the Partners HealthCare System, formed from a combination of the Brigham and Women’s and the Massachusetts General Hospitals. In 1984, EB became the founding chair of the Thrombolysis in Myocardial Infarction (TIMI) study group, which became one of the best known academic research organizations in cardiovascular disease. The more than 50 (and counting) prospective randomized trials carried out by TIMI have defined the elements of the optimal care of patients with acute coronary syndromes and were recently summarized in the *Journal*.¹

EB’s first major article was published in *Circulation Research* in July 1954, and he has been a major force in cardiology ever since.² His early work at the National Heart Institute focused on valvular heart disease. He and his colleagues were the first to measure pressure gradients across stenotic heart valves in patients. They developed and applied transseptal left heart catheterization. EB and his colleagues were the first to show the reversibility of pulmonary vascular disease in patients with mitral valve disease who had undergone mitral valve replacement, and

From the Division of Cardiac Surgery, Brigham and Women’s Hospital, Boston, Mass.

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Address for reprints: Lawrence H. Cohn, MD, Division of Cardiac Surgery, Brigham and Women’s Hospital, 75 Francis St, Boston, MA 02115 (E-mail: lcohn@partners.org).

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they defined the natural history of aortic stenosis. Both of these observations had an important impact on patient selection for valve replacement, which was a source of considerable debate in the 1960s. He collaborated with his surgical colleague, Andrew G. Morrow, in describing the pathophysiology, natural history, and treatment of hypertrophic cardiomyopathy. EB also worked on the control of ventricular function, and he and his colleagues were the first to measure both left ventricular ejection fraction and left ventricular dP/dt in patients. His group described the upregulation of the adrenergic nervous system in human heart failure and demonstrated the first neuro-humoral defect. Their animal experiments showed that the size of a myocardial infarct can be altered profoundly by a number of physiologic and pharmacologic interventions that modify myocardial oxygen consumption and by the restoration of coronary perfusion, especially if implemented within a short time after coronary occlusion.² They defined myocardial stunning and demonstrated ventricular remodeling after myocardial infarction. Extending this work to patients, they were the first to describe the benefits of angiotensin-converting enzyme inhibition in patients with impaired cardiac function after myocardial infarction and to demonstrate improved outcomes with statin treatment in patients with average cholesterol levels after infarction.

The formation of the TIMI study group has led to widespread changes in practice. For example, EB and his colleagues demonstrated improved patient survival with a patent coronary artery, which led to the widely accepted “open artery hypotheses.” In the PROVE-IT TIMI 22 Trial, the group demonstrated the benefit of more intensive reduction of low-density lipoprotein cholesterol in high-risk coronary artery patients, a finding that has changed practice guidelines and has favorably affected the lives of many patients.

EB has served as an editor of *Harrison's Principles of Internal Medicine* for 12 editions and is the founding editor of *Heart Disease*, now in its 9th edition. These are the most influential textbooks in their respective fields.

Science Watch has listed EB as the most frequently cited author in cardiology, with an *h*-index of 177. On the basis of his contributions, he has received numerous honors and awards, including the Research Achievement and Herrick Awards of the American Heart Association, the Distinguished Scientist Award of the American College of Cardiology, and the Gold Medal for Research of the European Society of Cardiology. He has received lifetime achievement awards from the American College of Cardiology, the Heart Failure Society of America, and the Austrian Society of Cardiology. In 2013, he received the Lifetime Achievement Award of The American Association for Thoracic Surgery. He is the recipient of 21 honorary degrees from distinguished universities throughout the world. EB was for years the only cardiologist elected to the National Academy of Sciences of the United States. The living Nobel Prize winners in medicine voted EB as “the person who has contributed the most to cardiology in recent years.”

Nina Braunwald passed away in 1992. EB remarried and lives with his wife Elaine in Weston, Massachusetts. All 3 daughters and 7 grandchildren live in nearby Wayland.

EB's biography and his influence on the rise of modern medicine were recently published by the Harvard University Press.³

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