Doll Wynder Award

This award honors scientists who have made groundbreaking advances in public health, public policy or epidemiological research.

RICHARD DOLL

Sir William Richard Shaboe Doll was a British physiologist who became the foremost epidemiologist of the 20th century, turning the subject into a rigorous science. He was a pioneer in research linking smoking to health problems. With Ernst Wynder, Bradford Hill, and Evarts Graham, he was credited with being the first to prove that smoking caused lung cancer and increased the risk of heart disease. In 1948, he joined a research team under Dr. Francis Avery-Jones at the Central Middlesex Hospital, run under the auspices of the statistical research unit of the Medical Research Council. Over a 21-year career in the unit, Doll rose to become its director. In 1950, with Austin Bradford Hill, he undertook a study of lung cancer patients in 20 London hospitals, at first under the belief that it was due to the new material tarmac or motor car fumes, but rapidly discovering that tobacco smoking was the only factor they had in common. Doll himself stopped smoking as a result of his findings, published in the British Medical Journal in 1950, which concluded; “The risk of developing the disease increases in proportion to the amount smoked. It may be 50 times as great among those who smoke 25 or more cigarettes a day as among non-smokers.” Four years later, in 1954 the British Doctors Study, a study of some 40,000 doctors over 20 years, confirmed the suggestion, which led to a government-issued advice that smoking and lung cancer rates were related. In 1966, Doll was elected to the Royal Society. The citation stated: Doll is distinguished for his researches in epidemiology, and particularly the epidemiology of cancer where in the last 10 years he has played a prominent part in (a) elucidating the causes of lung cancer in industry (asbestos, nickel & coal tar workers) and more generally, in relation to cigarette smoking; and (b) in the investigation of leukaemia particularly in relation to radiation, where using the mortality of patients treated with radiotherapy he has reached a quantitative estimate of the leukaemogenic effects of such radiation. In clinical medicine he has made carefully controlled trials of treatments for gastric ulcer. He has been awarded the United Nations Prize for outstanding research into the causes and control of cancer and the Bisset Hawkins Medal of the Royal College of Physicians for his contributions to preventative medicine. Doll was made a Fellow of the Royal Society in 1966, knighted in 1971, and awarded the Edward Jenner Medal of the Royal Society of Medicine in 1981. In 1996, he was made a Companion of Honour for “services of national importance”. International honours included the Presidential Award of the New York Academy of Sciences as well as a UN Award for his research into cancer. In April 2005, he was awarded the Saudi Arabian King Faisal International Prize for medicine jointly with Richard Peto for their work on diseases related to smoking. In 2004, he was awarded the inaugural Shaw Prize for Life Sciences and Medicine for his contribution to modern cancer epidemiology. He was also awarded honorary degrees by 13 different universities.

ERNST WYNDER

Ernst Ludwig Wynder was an American epidemiology and public health researcher who studied the risk factors of smoking tobacco. His 1950 coauthored publication entitled, “Tobacco Smoking as a Possible Etiologic Factor in Bronchiogenic Carcinoma: A Study of 684 Proved Cases” appeared in the Journal of the American Medical Association. It was one of the first major scientific publications identifying smoking as a contributory cause of lung cancer. Wynder began collaborating with his coauthor on the article, Evarts Ambrose Graham, as a medical student at Washington University in St. Louis in 1947. The previous summer he had conducted epidemiological studies of smoking behavior among 146 lung cancer patients in New York City.
The project was funded by the American Cancer Society. Now, with Graham, Wynder collected extensive data on 604 patients with lung cancer at hospitals across the United States. Departing from a tradition of using anecdotal evidence (e.g., clinical interviews) to develop explanations of disease causation, Wynder and Graham applied rudimentary statistical methods to their study. They divided patients into crude categories of “moderate” or “heavy” smokers, based on retrospective interviews of each patient’s smoking behavior over a 20-year period. They also measured and controlled for important confounding factors (e.g., age, types of tobacco use, inhalation level). Most importantly, with regard to an ability to demonstrate causation, Wynder and Graham also studied a control group of cancer free individuals in hospitals. They used this control group to systematically compare their lung cancer patients. On May 27, 1950, the Journal of the American Medical Association published the resulting scientific report. Wynder and Graham found that lung cancer could develop among nonsmokers, such that smoking is not the single factor in the induction of disease. But they identified smoking’s role as a significant risk factor for lung cancer, providing four reasons to support this argument: 1) lung cancer prevalence was found to be rare in nonsmokers; 2) among patients with lung cancer, cigarette use tended to be high; 3) lung cancer prevalence among men and women matched patterns of smoking behavior in men and women; and 4) “the enormous increase in the sale of cigarettes in this country approximately parallels the increase in [lung cancer].” As further scientific evidence of smoking’s role in causing lung cancer began to mount in the United States and Great Britain, Wynder and Graham investigated the biological plausibility of the association between smoking and lung disease. In 1950, they initiated a study of the impact of tars from tobacco smoke on mice. After a year of exposure to tar, 44 percent of the mice developed cancers. Wynder also discovered specific carcinogens in tar (e.g., benzopyrenes, arsenic), but was unable to identify the contributions of these chemicals to cancer.