

Giants in Chest Medicine

Jay A. Nadel, MD

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Editor's Note: This series recognizes and highlights the accomplishments of individuals who have contributed greatly to chest medicine. To watch the interview with Dr Nadel, go to journal.publications.chestnet.org

I thank Richard S. Irwin, MD, Master FCCP, and Editor in Chief, *CHEST*, for offering me the opportunity to profile Jay A. Nadel, MD, a giant in chest medicine. Born in 1929 in Philadelphia, Pennsylvania, Dr Nadel received his MD degree from Jefferson Medical College in 1953. During his internship and residency in cardiology at Philadelphia General Hospital (1953-1956), Dr Nadel met Julius Comroe, MD, who headed the Graduate School at the University of Pennsylvania. Subsequently, Dr Nadel spent 2 years in the US Air Force (Travis Air Force Base) near San Francisco, California, and Dr Comroe was recruited to head the Cardiovascular Research Institute at the University of California, San Francisco (UCSF). In 1958, Dr Nadel was chosen to be Dr Comroe's research fellow.

Dr Nadel's first research showed the deleterious effects of cigarette smoke in the airways. In 1962, he was a visiting scientist in Oxford, England. After returning to UCSF, Dr Nadel's experience with London fog drove him to investigate the deleterious effects of air pollutants, focusing on ozone and sulfur dioxide. These studies became the basis of the laws limiting these pollutants

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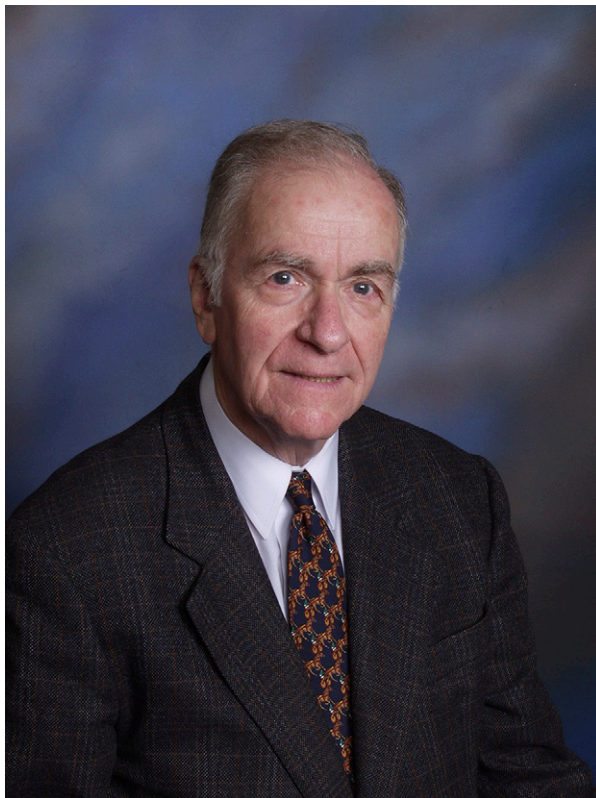
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ADDITIONAL INFORMATION: See video interview of Dr Nadel online at <http://dx.doi.org/10.1378/chest.14-2901>.

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VIDEO 



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in California and, subsequently, the basis of the US national standards. Dr Nadel was awarded one of the early A. P. Giannini Foundation fellowships to perform this air pollution research.

Professors Comroe and Holly Smith, MD, chair of Medicine at UCSF, quickly recognized Dr Nadel's genius for problem solving and leadership and appointed him the first chief of the Division of Pulmonary Diseases. He became professor of Medicine in 1970, Radiology in 1974, and Physiology in 1976.

Dr Nadel's early work on inhaled irritants, cigarette smoke, and air pollutants drew his attention to the relationship between the environment, which is the source of inhaled particulates that act as "invaders" (viruses, bacteria, smoke, pollutants, allergens, other irritants) and the lungs, which "defend" the host. Dr Nadel realized that

the battle between environmental invaders and lung defenders must begin at the lung epithelial luminal surfaces, especially in airways. Thus, viruses depositing on the luminal surface must enter the epithelial cells to multiply, so we must pay attention to the luminal (invading) surface of the epithelium. In the early days of cell and molecular biology, Dr Nadel focused his attention on the airway epithelial cells, a major target for the deposition of invading particulates. This continuing focus led him and his colleagues to discover important proinflammatory and antiinflammatory signaling pathways. Further, the Nadel group described other signaling pathways, some of which exaggerate the inflammatory responses and others that inhibit them. These interactions provide important strategies for future studies of the interactions of signaling pathways such as epidermal growth factor receptor, epithelial interferon signaling, and the cystic fibrosis transmembrane conductance regulator (the molecule whose absence is responsible for cystic fibrosis).

From 1977 to 2012, Dr Nadel was the director of the UCSF National Institutes of Health Multidisciplinary Pulmonary Research Training Program. Pulmonary academicians throughout the world have trained under his leadership, including approximately 150 in his own laboratory. In appreciation of his many accomplishments, the University of Paris awarded him the René Descartes Medal. He has honorary degrees in medicine and law. In the laboratory, Dr Nadel works directly with each trainee. It is his belief that one senior scientist together with a single trainee can accomplish more than five researchers working alone!

As president of the American Thoracic Society, Dr Nadel successfully lobbied Congress to change the name of the National Heart Institute to the National Heart and Lung Institute. This change helped finance the development of lung research. The designation of pulmonology as a subspecialty followed. He also assisted in lobbying the National Institutes of Health for 5-year grants to be awarded to young pulmonary investigators. These awards provided the means for departments of medicine throughout the country to develop Lung Divisions.

When he was asked what keeps him in teaching and research at the age of 85, Dr Nadel said, "First of all, I have loved UCSF because of its history of open communication. When I arrived at UCSF in 1958, we were the 85th best medical school in the [United States]. Now we are tops. Second, as a trained physician and scientist, I have had the special opportunity to perform research at both the basic and clinical levels, and I have benefited

from the opportunity to help integrate basic science and clinical pulmonary medicine."

That reminded him to mention an important personal adventure: Together with John Murray, MD, esteemed as a world-famous pulmonologist, Dr Nadel coauthored the *Textbook of Respiratory Medicine* in the 1980s. In the textbook, the authors have made a special effort to integrate science and bedside medicine. It is now in its sixth edition, with constantly upgraded content and improved readability. Finally, Dr Nadel thanks the many colleagues who have added to the excitement of his life.

Suggested Readings

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