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Effects of Tobacco on Health and Disease: Three Decades of the Alton Ochsner Award

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The first Alton Ochsner Award Relating Smoking and Disease was presented in 1986. Three decades later, this award continues to focus attention on the biologic and pathophysiologic effects of tobacco smoke as a major cause of preventable lethal diseases.[1,2] For 31 years, the recipients of the award have demonstrated a multiplicity of biologic effects produced by tobacco smoke and its contents on the lungs, cardiovascular organs, and other target organs. These effects promote a variety of adverse neoplastic and other disease responses that can ultimately lead to death (Table 1). We now know that secondhand tobacco smoke also produces organ damage.[3] Further, deaths among smokers have been determined to be associated with causes that are not currently attributed to smoking.[4]

The precise underlying mechanisms promoting tobacco-related deaths remain, as yet, incompletely identified and understood. However, the achievements of the recipients of the Ochsner award have contributed to our understanding that prolonged tobacco consumption is a major etiologic entity that promotes one or more of a multiplicity of severe target organ diseases responsible for preventable deaths worldwide (Table 2).

THE AWARD AND SELECTION COMMITTEE

The Alton Ochsner Award Relating Smoking and Disease is a $15,000 prize presented to 1-3 honorees along with a medallion and plaque at the annual meeting of the American Public Health Association. The 2017 award will be presented in Atlanta, GA, on November 4-8, 2017. The American Public Health Association was chosen for its large membership and long-standing dedication to public health.

The award is named in honor of Doctor Alton Ochsner, a founder of the Ochsner Clinic in New Orleans, LA. In 1939, Doctor Ochsner, along with Doctor Michael DeBakey, published "Primary Pulmonary Malignancy: Treatment by Total Pneumonectomy; Analysis of 79 Collected Cases and Presentation of 7 Personal Cases" with the observation, "In our opinion the increase in smoking with the universal custom of inhaling is probably a responsible factor [for the increase in pulmonary carcinoma], as the inhaled smoke, constantly repeated over a long period of time, undoubtedly is a source of chronic irritation to the bronchial mucosa." Doctor Ochsner is widely credited with exposing the link between smoking and lung cancer.

Each year, the Ochsner Clinic Foundation invites the deans and major department chairs of American, Canadian, and other schools of medicine and all Veterans Affairs hospitals to nominate 1-3 investigators for the award. All nominations are made by a knowledgeable individual and at least 2 supporting physicians or scientists with expertise in the basic and clinical sciences, including epidemiology.

The original selection committee for the award included Doctor Claude Lenfant, Director of the National Heart, Lung, and Blood Institute of the National Institutes of Health; Doctor Eugene Braunwald, Harvard University; Doctor Michael DeBakey, Professor of Surgery, Baylor University;[1] Doctor Shevert Frazier, Harvard University and former Director of the National Institute of Mental Health; Doctor William B. Kannel, Director of the Framingham Heart Study; Doctor Rosalyn Yalow, Nobel Laureate and Senior Medical Investigator, Veterans Administration; Doctor George Porter, President of Ochsner Clinic Foundation; and Doctor Edward D. Frohlich, Vice President of Education and Research, Ochsner Clinic Foundation.

The committee's current membership includes Robert W. Anderson, MD, The David C. Sabiston, Jr., Professor and Chairman Emeritus, Duke University Medical Center; Robert M. Carey, MD, MACP, Professor of Medicine, Dean Emeritus, University of Virginia School of Medicine; Aram V. Chobanian, MD, President Emeritus, Dean Emeritus, Professor of Medicine, Boston University; John T. Cole, MD, Vice Chairman, Medical Specialties, Ochsner Medical Center; Elizabeth T. H. Fontham, DrPH, Founding Dean

Table 1. Other Diseases, Disease Mechanisms, and Consequences Initiated by Tobacco Smoking and Related Concepts Promoted By Investigations Recognized by the Alton Ochsner Award Relating Smoking and Disease

- Pulmonary and nonpulmonary malignancies
- Nonpulmonary lethal consequences of prolonged tobacco smoking
- Emphysema
- Atherosclerotic and other cardiovascular diseases
- Fetal malformations
- Initiation of cellular genetic and biologic mechanisms of target-organ diseases, including inflammation
- Policy studies and economic analyses
- Addiction, substance abuse, psychiatric diseases

Table 2. Recipients of The Alton Ochsner Award Relating Smoking and Disease

Year	Honoree	Award Recognition
1986	Oscar Auerback, MD VA Hospital, University of Medicine and Dentistry, Newark, NJ	Showed that prolonged smoking-induced oncogenes preceded reversible development of bronchogenic carcinoma (dogs, man)
1987	Aaron Janoff, MD State University of New York, Stony Brook, NY	Showed that prolonged cigarette smoking was addictive and related to the nicotine content of cigarettes
1988	Ernest L. Winder, MD Washington University, St. Louis, MO	Confirmed original observations of Drs Ochsner and DeBakey (epidemiologically and clinically)
	Sir Richard Doll, MD University of Oxford, Oxford, UK	
	A. Bradford Hill, PhD University of London, London, UK	
1989	Frank Speizer, MD Harvard Medical School, Boston, MA	Showed that prolonged smoking progressively impaired lung function, eventually resulting in emphysema
1990	Gordon Snider, MD Boston University School of Medicine, Boston, MA	Showed the relationship of smoking and specific enzyme changes promoting emphysema in independent studies
	Ronald G. Crystal, MD National Heart, Lung, and Blood Institute, National Institutes of Health, Bethesda, MD	
1991	Jack Strong, MD Louisiana State University School of Medicine, New Orleans, LA	Demonstrated that young, long-standing cigarette smokers dying of sudden trauma had more atherosclerotic vascular changes than nonsmokers
1992	Murray Jarvic, MD, PhD VA Hospital, University of California-Los Angeles, Los Angeles, CA	Showed that prolonged smoking not only promoted nicotine-induced addiction but also fetal malformations in babies of mothers addicted to smoking
	Theodore A. Slotkin, PhD Duke University, Durham, NC	
1993	Curtis C. Harris, MD National Cancer Institute, National Institutes of Health, Bethesda, MD	Demonstrated that prolonged smoking induced specific oncogenes preceding the development of bronchogenic carcinoma
1994	Hildegard Schuller, DVM, PhD College of Veterinary Medicine, University of Tennessee, Knoxville, TN	Documented a direct interaction of cancer-causing tobacco-specific nitrosamines with neurotransmitter receptors and their associated growth-regulating signal transduction pathways
1995	Robert M. Senior, MD Washington University School of Medicine, St. Louis, MO	Demonstrated that smoking stimulated inflammation in elastic peptides in lung cells that promote emphysema
1996	Neal I. Benowitz, MD University of California-San Francisco, San Francisco, CA	Demonstrated the pharmacologic interaction of nicotine and its metabolites resulting in tobacco addiction and eventually lung cancer in independent studies
	Jack Henningfield, PhD National Institutes of Health, Bethesda, MD	
	Professor Michel Russell University of London, London, UK	
1997	James C. Hogg, MD University of British Columbia, Vancouver, British Columbia, Canada	Revealed the role of tobacco-induced alveolar cell lung injury by viral and other agents in long-term studies
1998	David Sidransky, MD Johns Hopkins University School of Medicine, Baltimore, MD	Showed that the sputum of patients who smoke demonstrate lung cells that have undergone changes, permitting diagnosis of lung cancer even before changes are shown clinically

Table 2. Continued

Year	Honoree	Award Recognition
1999	John Repine, MD University of Colorado Webb-Waring Antioxidant Research Institute, Denver, CO	Demonstrated that white blood cells release oxidants that enhance inflammatory responses of chemical factors that aggravate the response to smoking, leading to chronic bronchitis, emphysema, and impaired lung function
2000	Jill M. Siegfried, PhD University of Pittsburgh, Pittsburgh, PA	Demonstrated, using tissue culture of biopsies, lung cell responses by cellular growth factors and receptor pathways that control non–small cell lung tumor growth
2001	Stephen S. Hecht, PhD University of Minnesota, Minneapolis, MN Dietrich Hoffman, PhD Naylor Dana Institute for Disease Prevention, Valhalla, NY, American Health Foundation, New York, NY	Demonstrated that tobacco-specific nitrosamines induce smoking-induced carcinoma in lung cells
2002	Joseph F. Fraumeni, MD National Cancer Institute, Bethesda, MD David M. Burns, MD University of California-San Diego, San Diego, CA	Identified major lung carcinoma cell clusters in the United States, thereby providing an interface between science and public policy
2003	John R. Hughes, MD University of Vermont, Burlington, VT	Developed rigorous criteria characterizing nicotine dependence and withdrawal as major obstacles to successful smoking dependence, substance abuse, and psychiatric disorders
2004	John D. Minna, MD University of Texas Southwestern Medical Center, Dallas, TX	Demonstrated how lung carcinoma cells stimulate genes, growth factors, and other substances and how certain therapeutic interventions interfere with signals, producing malignant cell growth
2005	Steven D. Shapiro, MD Brigham & Women's Hospital, Boston, MA Andrew M. Churg, MD, PhD and Joanne L. Wright, MD University of British Columbia, Vancouver, British Columbia, Canada	Identified specific tissue enzymes responsible for tobacco smoke–induced lung destruction in emphysema that led to new therapeutic strategies
2006	Ronald G. Harvey, PhD University of Chicago Cancer Center, Chicago, IL	Identified specific polycyclic aromatic hydrocarbons in cigarette smoke that bind to genetic cellular substances that subsequently produce lung cancer on a molecular level
2007	Caryn Lerman, PhD University of Pennsylvania, Philadelphia, PA Rachel Tyndale, PhD Centre for Addiction and Mental Health, Toronto, Ontario, Canada	Focused on specific drugs that promote choice, dose, and duration of treatment of tobacco dependence based on the smoker's genetic characteristics
2008	Elizabeth Fontham, DrPH Louisiana State University School of Public Health, New Orleans, LA Jonathan M. Samet, MD Bloomberg School of Public Health, Johns Hopkins University, Baltimore, MD	Established the carcinogenicity of secondhand smoke, providing the final proof that passive smoking causes lung cancer
2009	Steven A. Belinsky, PhD Lovelace Respiratory Research Institute, University of New Mexico, Albuquerque, NM	Focused attention on long-standing cigarette smoking promotion of genetic and molecular changes in cells that result in lung cancer in biologic fluids
2010	Jerome S. Brody, MD University of Illinois, Chicago, IL Kenneth E. Warner, PhD University of Michigan School of Public Health, Ann Arbor, MI	Conducted economic analysis that tobacco use and smoking consumption and advertising costs provided modeling of effects of tobacco taxation, permitting public policy leading to remarkable reduction in national smoking rate

Table 2. Continued

Year	Honoree	Award Recognition
2011	Shabih U. Hasan, MD University of Calgary, Calgary, Alberta, Canada	Demonstrated that fetal and neonatal control of cardiac and respiratory function focused on adverse effects of tobacco in prenatal cigarette smoke exposure on underlying functional and molecular factors responsible for sudden infant death syndrome
2012	Jennifer Rubin Grandis, MD University of Pittsburgh Eye and Ear Institute, Pittsburgh, PA	Developed fundamental and clinical work leading to applications of multiple biologic therapies for treatment of tobacco-related head and neck carcinomas
2013	Avrum Spira, MD Boston University School of Medicine, Boston, MA	Defined impact of gene expression of cigarette smoke on the bronchial airway cell as a diagnostic biomarker for early diagnostic testing for lung cancer
2014	Laura J. Bierut, MD Washington University School of Medicine, St. Louis, MO	Defined interplay between genetic mechanisms of smoking dependence, relating nicotine receptor gene cells to nicotine dependence and the risk of early-onset smokers (<16 years of age) and their response to therapy
	Charles H. Hennekens, MD Florida Atlantic University, Boca Raton, FL	Demonstrated the link between smoking and heart attacks, strokes, and death (especially in women); development of cataracts; and decreased lifespan in schizophrenia and determined estimates of benefits from smoking cessation (credited with the statement "death is inevitable but premature death is not")
2015	Sir Richard Peto University of Oxford, Oxford, UK	Provided novel and sustained contributions that permitted understanding the causal role of tobacco in a myriad of human diseases through his elegant analyses of the 20-, 40-, and 50-year follow-up of the British Doctors' Study; clear documentation of the substantial benefits of smoking cessation; and his analyses of smoking hazards among women throughout the worldwide tobacco epidemic
2016	Michael C. Fiore, MD University of Wisconsin School of Medicine and Public Health Madison, WI	Wrote extensively about the effects of tobacco smoke and its related countless deaths as chair of all three Surgeon General's US Public Health Service Clinical Practice Guidelines
	Ramaswamy Govindan, MD Washington University School of Medicine, St. Louis, MO	Contributed seminal findings toward understanding patients who never smoked and had less severe types of lung cancer than patients who did smoke and had more severe types of non–small cell lung cancer
2017	Augustine M. K. Choi, MD Weill Cornell Medical College, New York, NY	Defined mechanisms of cell injury in lung diseases and identified the antiinflammatory actions of very small amounts of carbon monoxide

and Professor Emeritus, School of Public Health, Louisiana State University Health Sciences Center; Edward D. Frohlich, MD, Alton Ochsner Distinguished Scientist, Ochsner Clinic Foundation; William A. McDade, MD, PhD, Executive Vice President, Chief Academic Officer, Ochsner Clinic Foundation; and Richard N. Re, MD, Scientific Director, Ochsner Clinic Foundation.

FUTURE PLANS

During the past 3 decades, we have come to much better understand the effects of long-term smoking. We have learned much concerning the myriad biologic effects initiated by constituents of tobacco smoke. The recipients of the Alton Ochsner Award Relating Smoking and Disease have clearly demonstrated a large number of deadly consequences in addition to pulmonary and cardiovascular diseases. We will continue to present this award to stimulate the generation of scientific information, promote understanding of the tobacco scourge, and deliver the important message to the media and general public that tobacco smoking produces fatalities.

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