

Joseph H. Holmes Pioneer Award-Basic Science

In 1977, the Pioneer Award, which honored an individual who significantly contributed to the growth and development of diagnostic ultrasound, was established. This special award was renamed in 1982, to honor Joseph H. Holmes, MD, who died that year. Dr. Holmes, the first person named as an AIUM pioneer, was an important figure to both the field of diagnostic ultrasound and the AIUM. His early efforts in ultrasound research, which included tissue characterization and ultrasound's diagnostic use in polycystic kidney disease and orthopedics, helped to advance the field of ultrasound and encourage others to conduct new research. Serving the AIUM in many capacities, Dr. Holmes was president from 1968 to 1970, and was editor of the AIUM's official journal, which was then titled, the Journal of Clinical Ultrasound, for nearly 10 years. Each year the Joseph H. Holmes Pioneer Award honors two current or retired AIUM members, one in clinical science and the other in basic science.

Kathy R. Nightingale, PhD



Kathy R. Nightingale, PhD, became a pioneer of acoustic radiation force impulse (ARFI) elasticity imaging while earning her PhD in Biomedical Engineering (1997) from Duke University. Research for her thesis on using ultrasound to differentiate cysts from solid lesions¹ led the way to ARFI elastography. Dr Nightingale's thesis demonstrated that high-intensity ultrasound pulses in fluid-filled cysts created acoustic streaming that could be detected with Doppler ultrasound, but the high-intensity ultrasound pulses did not have the same effect on solid lesions.

Since that time, Dr Nightingale has remained at Duke University where she is now a Theo Pilkington Distinguished Professor of Biomedical Engineering and is head of the Nightingale Laboratory of Biomedical Engineering, where the faculty and students continually study the magnitude, location, spatial extent, and duration of acoustic radiation force. As a result of their work, Dr Nightingale has been an inventor on 10 patents with more in the works.

As a reflection of her hard work, Dr Nightingale earned National Academy of Inventors Fellow status, which "highlights academic inventors who have demonstrated a prolific spirit of innovation in creating or facilitating outstanding inventions that have made a tangible impact on quality of life, economic development and the welfare of society."² Dr Nightingale is also a fellow of the American Institute for Medical and Biological Engineering, whose fellows represent the top 2% of the medical and biological engineering community.

In 2020, she was also appointed to the National Advisory Council for the National Institute of Biomedical Imaging and Bioengineering of the National Institutes of Health (NIH) to advise the Secretary of the Department of Health and Human Services (DHHS); the Assistant Secretary for Health, DHHS; the Director of the NIH; and the Director of the National Institute of Biomedical Imaging and Bioengineering. And, in 2021, she was awarded from, the Institute of Electrical and Electronics Engineers, the Carl Hellmuth Hertz Ultrasonics Award, which recognizes one investigator

each year for their outstanding mid-career achievements and for promoting the field of Ultrasonics. In addition, she has received multiple teaching awards, representing her devotion to sharing her knowledge with others.

In addition to teaching in a school environment, Dr Nightingale also shares her knowledge via numerous other outlets, including as an author, lecturer, reviewer, presenter, and chair. Throughout her career as a biomedical engineer and professor, Dr Nightingale has excelled at demonstrating her voracious desire to learn more and share that knowledge with others.

References

1. Nightingale KR, Kornguth PJ, Walker WF, McDermott BA, Trahey GE. A novel ultrasonic technique for differentiating cysts from solid lesions: preliminary results in the breast. *Ultrasound Med Biol* 1995; 21:745–751. PMID: 8571462.
2. About the NAI Fellows. *The National Academy of Inventors* website. <https://academyofinventors.org/fellows/>. Accessed January 21, 2022.