

# DAVID R. WALT

**Harvard Medical School  
Brigham and Women's Hospital, Department of Pathology  
Wyss Institute for Biologically-Inspired Engineering  
Boston, Massachusetts**



**Title of Lecture:** "Using Microwell Array Technology to Probe Chemistry and Biology at Their Fundamental Limits"

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## **Education:**

1979 Ph.D., Stony Brook University

1974 B.A., University of Michigan

## **Research and Professional Experience**

2017 - present	Core Faculty, Wyss Institute for Biologically-Inspired Engineering
2017 - present	Professor of Pathology, Brigham and Women's Hospital
2017 - present	Professor, Harvard Medical School
2013 - 2017	University Professor, Tufts University
2016 - present	Howard Hughes Medical Institute Professor
1995 - 2015	Robinson Professor of Chemistry, Tufts University
1989 - 1996	Chairman, Department of Chemistry, Tufts University
1986 - 1992	Associate Professor, Tufts University
1981 - 1986	Assistant Professor Department of Chemistry, Tufts University
1979 - 1981	Postdoctoral Associate, Massachusetts Institute of Technology

## **Honors and Awards**

American Chemical Society Kathryn C. Hach Award for Entrepreneurial Success (2017); National Academy of Medicine Member (2016); Ralph N. Adams Award in Bioanalytical Chemistry (2016); Honorary Doctor of Science, Stony Brook University (2014); ACS Gustavus John Esselen Award (2014); National Academy of Inventors Fellow (2013); American Academy of Arts and Sciences Member (2013); American Chemical Society Division of Analytical Chemistry Spectrochemical Analysis Award (2013); Pittsburgh Analytical Chemistry Award (2013); University of Michigan Distinguished Innovator Lecture (2010); Stony Brook University Distinguished Alumni Award (2010); ACS National Award for Creative Invention (2010); National Academy of Engineering Member (2008); American Institute for Medical and Biological Engineering Fellow (AIMBE) 2008; Herman Bloch Award, University of Chicago, Department of Chemistry (2004); American Association for the Advancement of Science Fellow (2000); Professor Invitee', Ecole Normale Supérieure (1999); Biosensors and Bioelectronics Award (1996); National Science Foundation Special Creativity Award (1995); 3M Research Creativity Award (1989).

## **Research Interests**

Professor Walt's laboratory uses microwell arrays to detect single molecules. His group developed a single molecule detection technology, called Simoa for single molecule arrays, to detect proteins at 1000 times lower concentrations than conventional methods, thereby opening up an entirely new set of proteins that can now be detected in the blood. The technology is being used in clinical studies to develop a blood test for detecting early-stage breast cancer, for diagnosing latent tuberculosis, and for detecting various infectious diseases using the host response to infection. Professor Walt's laboratory has also developed methods to measure the concentrations of key biomolecules in single cells. The research has important implications for understanding the stochastic nature of biological systems as well as for practical applications in which cells are used to assess toxicity and bioavailability. In addition, the laboratory is using arrays of single molecules to study fundamental aspects of stochastic processes such as enzyme activity fluctuations.