CHEMICAL HERITAGE FOUNDATION

# MARVIN L. VESTAL

Transcript of an Interview
Conducted by

Michael A. Grayson

at

Orange County Convention Center
Orlando, Florida

on

3 March 2010

(With Subsequent Corrections and Additions)

## ACKNOWLEDGMENT

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# MARVIN L. VESTAL

1934 Born in Pendleton, Indiana on 8 September.

## Education

1958 B.S., Engineering Sciences, Purdue University
1960 M.S., Engineering Sciences, Purdue University
1975 Ph.D., Chemical Physics, University of Utah

## Professional Experience

U.S. Army
1954-1956 Signal Corp, Fort Huachuca, Arizona

Johnston Laboratories, Baltimore, Maryland
1958-1967 Scientist

Scientific Research Instruments Corp., Baltimore, Maryland
1967-1970 Senior Scientist and Founder
1970-1976 Consultant

University of Utah, Salt Lake City, Utah
1970-1975 Research Instructor, Chemistry
1975-1976 Research Associate Professor, Chemistry

University of Houston, Houston, Texas
1976-1981 Associate Professor of Chemistry
1981-1987 Professor of Chemistry

Vestec Corporation, Houston, Texas
1983-1993 President

PerSeptive Biosystems, Framingham, Massachusetts
1993-1997 Vice President, Mass Spectrometry

Applied Biosystems/PerSeptive Biosystems, Framingham, Massachusetts
1997-2001 Scientific Fellow and Vice President, Mass Spectrometry

Applied Biosystems, Framingham, Massachusetts
2001-2004 Principal Scientist, TOF Mass Spectrometry Research

| | |
|---|---|
| | Virgin Instruments, Framingham, Massachusetts |
| 2004-present | Founder, CEO, CSO |

## Honors

| | |
|---|---|
| 1985 | Lester W. Strock Award |
| 1997 | Scientific Fellow, PerSeptive Biosystems |
| 2005 | Field and Franklin Award for Distinguished Contribution in Mass Spectrometry |
| 2010 | Distinguished Contribution in Mass Spectrometry |

## ABSTRACT

**Marvin L. Vestal** grew up in Pendleton, Indiana, one of two children. Vestal's father was a farmer and self-taught engineer whose father refused to allow him to attend high school. He encouraged Marvin and his brother to get an education, because they were "too damn lazy to work for [a living]." Marvin obtained both bachelor's and master's degrees in Engineering Sciences from Purdue University, taking a break after two years to volunteer for the draft; he was assigned to join the U.S. Army Signal Corps. He finished his undergraduate degree and master's degree on the GI Bill, coming out of Purdue with no college debt. During college he worked part time at Johnston Laboratories, meeting there Henry Rosenstock and Merrill Wallenstein, who had studied at the University of Utah under Austin Wahrhaftig and Henry Eyring, and who developed the quasi-equilibrium theory (QET) of mass spectrometry (MS). Rosenstock left Johnston Laboratories, so Vestal continued the coincidence time-of-flight (TOF) project on which the two had been working; he also improved the machine with his invention of an electron multiplier.

When Johnston Labs moved to Baltimore, Maryland, Vestal also moved. He began a physics PhD program at Johns Hopkins University but quit after two years to work full time at Johnston. He left that company to found Scientific Research Instrument Corporation (SRIC), with cofounders Gordon Fergusson, William Johnston (of Johnston Labs), and Bob Jones. The company licensed the new process chemical ionization (CI) from its inventors, Burnaby Munson and Frank Field, and Vestal was the first to commercialize it. Ever restless, Vestal decided that the academic world held appeal, so he went to the University of Utah for a PhD in chemical physics, studying under Wahrhaftig and Futrell. He published some papers along the way; he built a triple quadrupole MS for photodissociation. With Calvin Blakely he built a crossbeam MS for his dissertation.

PhD in hand, Vestal accepted a position at the University of Houston, where he stayed for eleven years. During those years he invented and patented thermospray and started another company, Vestec, which did so well he had to leave the University to work at Vestec. The company commercialized MALDI/TOF instruments and sold "a bunch" all over the world. Vestec's merger with PerSeptive, led by Noubar Afeyan, eventually led to the merger with Applied Biosystems. Internal problems caused MALDI to be sold to ABSciex. Vestal retired from ABSciex but soon came out of retirement to found a new company. Virgin Instruments, working to find the theory for optimizing any MALDI, has produced instruments in sizes from desktop to two-story vertical. At AB Vestal and his coworkers were again first, this time to commercialize the revolutionizing delayed-extraction MALDI/TOF and then to develop the first commercial TOF/TOF.

Vestal discusses his views of a number of things: sources of innovation; grants; biases of reviewers; increasing complexity of science; dearth of American graduate students; persistence of professional managers and wasteful meetings ("less talk and more do"); interesting people he has met through science; publishing; friendly competition; his wife's career; patents (he has at least fifty), licensing, and lawsuits; women in science, particularly MS; influences of Rosenstock, Wahrhaftig, and Futrell on his thinking; his influence on others; and the Distinguished Contribution to Mass Spectrometry award given him in 2010 by the American Society for Mass Spectrometry (ASMS).

Vestal concludes his interview with a discussion of his newest company and his ideas for the future. He thinks biology is extremely important and has already driven a huge expansion of

the field; he hopes his instruments will continue to drive research into biological applications. He talks about electrospray and MALDI's superiority, but thinks MALDI is reaching its limits. His company will have a new instrument within a year. His advice to young would-be scientists is to do science for love, not money. Thinking about his own career in science, he says he has always "followed [his] nose."

## INTERVIEWER

**Michael A. Grayson** retired from the Mass Spectrometry Research Resource at Washington University in St Louis in 2006. He received his B.S. degree in physics from St. Louis University in 1963 and his M.S. in physics from the University of Missouri at Rolla in 1965. He is the author of over forty-five papers in the scientific literature dealing with mass spectrometry. Before joining the Research Resource, he was a staff scientist at McDonnell Douglas Research Laboratory. While completing his undergraduate and graduate education, he worked at Monsanto Company in St. Louis, where he learned the art and science of mass spectrometry under O. P. Tanner. Grayson is a member of the American Society for Mass Spectrometry (ASMS), and currently is the Archivist for that Society. He has served many different positions within ASMS. He has served on the Board of Trustees of CHF and is currently a member of CHF's Heritage Council. He continues to pursue his interest in the history of mass spectrometry by recording oral histories, assisting in the collection of papers, researching the early history of the field, and preparing posters recounting historic developments in the field.

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