

CHEMICAL HERITAGE FOUNDATION

**ARUL M. CHINNAIYAN**

The Pew Scholars Program in the Biomedical Sciences

Transcript of an Interview  
Conducted by

David J. Caruso

at

University of Michigan  
Ann Arbor, Michigan

on

21 and 22 October 2008

(With Subsequent Corrections and Additions)

## ACKNOWLEDGEMENT

This oral history is part of a series supported by a grant from the Pew Charitable Trusts based on the Pew Scholars Program in the Biomedical Sciences. This collection is an important resource for the history of biomedicine, recording the life and careers of young, distinguished biomedical scientists and of Pew Scholars Program in the Biomedical Sciences Advisory Committee members.

This oral history is made possible through the generosity of



CHEMICAL HERITAGE FOUNDATION  
Oral History Program  
FINAL RELEASE FORM

This document contains my understanding and agreement with the Chemical Heritage Foundation with respect to my participation in the audio- and/or video-recorded interview conducted by David J. Caruso on 21-22 October 2008. I have read the transcript supplied by the Chemical Heritage Foundation.

1. The recordings, transcripts, photographs, research materials, and memorabilia (collectively called the "Work") will be maintained by the Chemical Heritage Foundation and made available in accordance with general policies for research and other scholarly purposes.
2. I hereby grant, assign, and transfer to the Chemical Heritage Foundation all right, title, and interest in the Work, including the literary rights and the copyright, except that I shall retain the right to copy, use, and publish the Work in part or in full until my death.
3. The manuscript may be read and the recording(s) heard/viewed by scholars approved by the Chemical Heritage Foundation subject to the restrictions listed below. The scholar pledges not to quote from, cite, or reproduce by any means this material except with the written permission of the Chemical Heritage Foundation. Regardless of the restrictions placed on the transcript of the interview, the Chemical Heritage Foundation retains the rights to all materials generated about my oral history interview, including the title page, abstract, table of contents, chronology, index, et cetera (collectively called the "Front Matter and Index"), all of which will be made available on the Chemical Heritage Foundation's website. Should the Chemical Heritage Foundation wish to post to the internet the content of the oral history interview, that is, direct quotations, audio clips, video clips, or other material from the oral history recordings or the transcription of the recordings, the Chemical heritage Foundation will be bound by the restrictions for use placed on the Work as detailed below.
4. I wish to place the conditions that I have checked below upon the use of this interview. I understand that the Chemical Heritage Foundation will enforce my wishes until the time of my death, when any restrictions will be removed.

**Please check one:**

a.  \_\_\_\_\_

**No restrictions for access.**

**NOTE:** Users citing this interview for purposes of publication are obliged under the terms of the Chemical Heritage Foundation Oral History Program to obtain permission from Chemical Heritage Foundation, Philadelphia, Pennsylvania.

b.  \_\_\_\_\_

**Semi-restricted access.** (May view the Work. My permission required to quote, cite, or reproduce.)

c.  \_\_\_\_\_

**Restricted access.** (My permission required to view the Work, quote, cite, or reproduce.)

This constitutes my entire and complete understanding.

(Signature) \_\_\_\_\_

Arul Chinnaiyan

(Date) \_\_\_\_\_

1/26/10

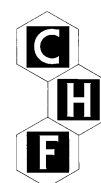
This oral history is designated **Free Access**.

**Please note:** Users citing this interview for purposes of publication are obliged under the terms of the Chemical Heritage Foundation (CHF) Oral History Program to credit CHF using the format below:

Arul M. Chinnaiyan, interview by David J. Caruso at the University of Michigan, Ann Arbor, Michigan, 21-22 October 2008 (Philadelphia: Chemical Heritage Foundation, Oral History Transcript # 0650).



Chemical Heritage Foundation  
Oral History Program  
315 Chestnut Street  
Philadelphia, Pennsylvania 19106



The Chemical Heritage Foundation (CHF) serves the community of the chemical and molecular sciences, and the wider public, by treasuring the past, educating the present, and inspiring the future. CHF maintains a world-class collection of materials that document the history and heritage of the chemical and molecular sciences, technologies, and industries; encourages research in CHF collections; and carries out a program of outreach and interpretation in order to advance an understanding of the role of the chemical and molecular sciences, technologies, and industries in shaping society.

## ARUL M. CHINNAIYAN

1969 Born in Cleveland, Ohio on 6 December

### Education

1992 B.S., University of Michigan, Cellular and Molecular Biology  
1999 M.D./Ph.D., University of Michigan, Pathology, under Vishva M. Dixit

### Professional Experience

University of Michigan Medical School

1992-1999	M.D./Ph.D. Fellow, Medical Scientist Training Program
1999-2001	House Officer, Clinical Pathology Laboratories
1999-2001	Research Investigator, Pathology
1999-present	Director, Pathology Microarray Laboratory, Pathology
2001-2004	Assistant Professor, Pathology and Urology
2002-2004	Director, Tissue/Informatics Core, UM Prostate S.P.O.R.E.
2004-present	Director, Cancer Bioinformatics, Comprehensive Cancer Center
2005-present	Director, pathology Research Informatics, Pathology
2004-2006	Associate Professor, Pathology and Urology
2006-present	S. P. Hicks Endowed Developmental Professorship
2006-present	Professor, Pathology and Urology
2007-present	Director, Michigan Center for Translational Pathology
2008-present	Investigator, Howard Hughes Medical Institute

### Honors

1998	Horace H. Rackham Distinguished Dissertation Award, Rackham School of Graduate Studies, University of Michigan
1998	Amersham Pharmacia Biotech and Science Prize, North American Region, Uppsala, Sweden
1999	Medical Degree "With Distinction in Research," University of Michigan Medical School
1999	Dean's Award for Research Excellence, University of Michigan Medical School
1999	Faculty Development Award, Prostate S.P.O.R.E., University of Michigan Medical School
2000	Cheryl Whitlock Pathology Memorial Prize, Stanford University School of Medicine

2001	CapCURE Research Award
2001	Wendy Will Case Cancer Fund Award
2002	Excellence in Urologic Pathology Research, USCAP Annual Meeting
2002-2006	Pew Biomedical Scholar Award
2004	Young Investigator Award, Society of Basic Urological Research
2005	Amgen Outstanding Investigator Award, American Society for Investigative Pathology
2005	Basic Science Research Award, University of Michigan Medical School Dean's Office
2006	The Benjamin Castleman Award, United States and Canadian Academy of Pathology
2006	Elected Member of the American Society for Clinical Investigation
2006	S.P. Hiocks Endowed Professor of Pathology
2006	Burroughs Wellcome Foundation Award for Clinical Translational Research
2007	United States and Canadian Academy of Pathology Ramzi Cotran Young Investigator Award
2007	Society of American Asian Scientists in Cancer Research Award
2007	Inaugural AACR Team Science Award, American Association of Cancer Research
2007	SPORE Translational Science Award
2008	Outstanding Achievement in Cancer Research, American Association of Cancer Research
2008	Department of Defense Era of Hope Scholar
2009	Doris Duke Foundation Distinguished Clinical Scientist Award for Excellence in "Bench to Bedside" Research
2009	Elected Member of the Association of American Physicians
2009	American Cancer Society Research Professor
2009	Elected Member of the Institute of Medicine of the National Academies
2009	Philip Levine Award for Outstanding Research, American Society of Clinical Pathology
2009	Crain's Detroit Business 40 Under 40 Award
2009	Paul Marks Prize for Cancer Research, Memorial Sloan-Kettering Cancer Center

## ABSTRACT

**Arul M. Chinnaiyan** was born near Cleveland, Ohio, but spent his first years in a suburb of Chicago, Illinois, the elder of two sons whose parents came from India. His father was an electrical engineer, his mother a housewife. When Chinnaiyan was about thirteen the family moved to Ann Arbor, Michigan, where his father had taken a job.

Chinnaiyan had always liked the sciences, but his high school biology teacher made the subject come alive. He was also interested in computers and sports, especially tennis, playing on his high school team. By his junior year in high school, Chinnaiyan says he knew he wanted to study molecular biology or cell biology. Because it was a good school for biology; because it was close to home; because his father was ill with diabetes; and because the tuition was manageable, Chinnaiyan decided to attend the University of Michigan. He worked in Stephen Weiss's lab during summers and part time during the school year. There he worked on proteases in neutrophils for with mentor.

Chinnaiyan's father died while Chinnaiyan was in college; this helped him decide to enter the Medical Scientist Training Program at University of Michigan to obtain an MD/PhD. He began in Jeffrey Bonadio's lab, where he learned molecular biology, but he became fascinated by apoptosis and joined Vishva Dixit's lab at a time when the field of apoptosis was growing rapidly. From his research came the discovery of FADD, as well as twenty-one publications, some of which he had to hand deliver in order to beat his competitors. After three years of research, Peter Ward persuaded him to complete his residency in clinical pathology at the University of Michigan. He established his lab and became interested in studying biomarkers for prostate cancer. He started a DNA microarray facility too.

Chinnaiyan remained at Michigan as an assistant professor in pathology and urology. He established the Michigan Center for Translational Pathology. He had not been trained to write grants, but he made up for lost time, winning many awards and honors and becoming a Howard Hughes Medical Institute Investigator.

At the end of the interview he talks about learning to write grants and discusses his application for the Pew Scholars in the Medical Sciences award. He describes how he recruits students and postdocs; talks about publishing; and talks about lab time. He concludes his interview with thanks to his mother, who helped make all his work possible.

## INTERVIEWER

**David J. Caruso** earned a B.A. in the History of Science, Medicine, and Technology from the Johns Hopkins University in 2001 and a Ph.D. in Science and Technology Studies from Cornell University in 2008. His graduate work focused on the interaction of American military and medical personnel from the Spanish-American War through World War I and the institutional transformations that resulted in the development of American military medicine as a unique form of knowledge and practice. David is currently the Program Manager for Oral History at the CHF. His current research interest focuses on the discipline formation of biomedical science in 20th-century America and the organizational structures that have contributed to such formation.

## TABLE OF CONTENTS

Early Years	1
First years in Chicago suburb. Family background. Early interest in biology, computers, and sports. Tennis team. Schools. Move to Michigan. High school interest in molecular biology or cell biology. Science Olympiad.	
College Years	7
Matriculates into the University of Michigan. Father's diabetes. Liberal arts curriculum. Possible art history major. Deciding on biology major. Works on proteases in neutrophils in Stephen Weiss' lab. Honors thesis. Deciding to go into medicine. Switching to interest in research. Decides on MD/PhD program.	
Graduate School/Medical School Years	17
Chooses University of Michigan. Structure of MD/PhD program. Rotates into Jeffrey Bonadio's lab to learn more molecular biology. Fascinated by new field of apoptosis. Joins Vishva Dixit's lab. Discovering FADD. Fast-growing, competitive field of apoptosis. Twenty-one papers. Residency in clinical pathology. Designing his own lab, courtesy of Peter Ward. Interest in prostate cancer. Sets up DNA microarray facility.	
Faculty Years	30
Goes straight from residency to faculty position at University of Michigan. Minimal clinical work. Writes first grant. Discusses grants in general, Pew in particular. Gene fusion in application for Pew Scholars Program in the Biomedical Sciences grant. Establishes Michigan Center for Translational Pathology. Epigenetics; genomics; proteomics; metabolomics. Time at bench; publishing; recruiting students and postdocs.	
Index	56



## INDEX

### A

acquired immune deficiency syndrome, 7  
AIDS. *See* acquired immune deficiency syndrome  
American Cancer Society, 31, 33  
Ann Arbor, Michigan, 4, 36  
apoptosis, 19, 21, 22, 29, 30

### B

BCR-ABL, 38  
Beecher, Christopher, 40  
bioinformatics, 40  
Bonadio, Jeffrey F., 18, 24  
Boston, Massachusetts, 9, 23  
Brady, Thomas E.P., 27  
Brigham and Women's Hospital, 29  
Broad Institute, 39  
Brown, Patrick O., 29

### C

Canada, 50  
Cao, Xuhong, 41, 44  
Carr, Lloyd, 27, 28  
Chicago, Illinois, 1, 2, 4  
Chinnaiyan, Indrani (mother), 2  
Chinnaiyan, Kilvani (father), 2  
Chinnaiyan, Prakash (brother), 1  
Cleveland, Ohio, 1

### D

Dana Farber Cancer Center, 39  
Detroit, Michigan, 4  
Dixit, Vishva, 19, 21, 22, 23, 24, 29, 32  
DNA, 29, 35, 36  
    cDNA, 43  
Duke University, 39

### E

epigenetics, 40  
ErbB-2, 43

ETS (E-26 gene), 43, 44  
    TMPRSS2, 43  
Europe, 50  
Evanston, Illinois, 1

### F

FADD. *See* Fas-associated protein with Death Domain  
Fas-associated protein with Death Domain, 20, 22  
Fortran, 14

### G

gene fusion, 38, 39, 43, 52  
Genentech, 29  
genomics, 40  
GEN-PROBE, 52  
Glendale Heights, Illinois, 1, 4  
Goss, Mr., 4  
Gupta, Sanjay, 27

### H

Harvard University, 16, 39, 44  
HIV. *See* human immunodeficiency virus  
Howard Hughes Medical Institute, 18, 34, 40, 45, 46, 47, 53  
human immunodeficiency virus, 7

### I

India, 2

### K

Keene, Jack D., 39

### M

Massachusetts General Hospital, 29  
Massachusetts Institute of Technology, 39  
metabolomics, 40  
Michigan Center for Translational Pathology, 37, 38, 39, 40, 42, 44, 46

MIT. *See* Massachusetts Institute of Technology

## N

National Academy of Sciences, 12, 34  
National Institutes of Health, 33, 37, 45, 47, 49, 50  
National Science Foundation, 50  
New York City, New York, 16  
NIH. *See* National Institutes of Health  
Nobel Prize, 34  
NSF. *See* National Science Foundation

## O

Oncomine Tumor Microarray Repository, 43

## P

Pascal, 14  
Pew Scholars Program in the Biomedical Sciences, 1, 22, 32, 34, 36, 39, 41, 45, 49  
Advisory Board, 39  
Pheasant Ridge Elementary School, 4  
Pienta, Kenneth J., 40, 44  
Plymouth-Canton, Michigan, 4  
Plymouth-Salem High School, 4  
prostate cancer, 30, 31, 35, 38, 39, 43, 44  
protease, 11, 19, 22, 23  
proteomics, 40

## R

Rhodes, Daniel, 43, 44  
Rubin, Mark A., 44

## S

San Diego, California, 52  
Science Olympiad, 5  
Southfield, Michigan, 2  
Stanford University, 16, 29

## T

Tomlins, Scott, 43, 44

## U

United States Congress, 49, 50  
University of Michigan, 4, 7, 8, 9, 16, 27, 29, 32, 38, 44, 46, 51, 53  
Traverwood campus, 40

## V

Varambally, Sooryanarana, 41, 44

## W

Ward, Peter A., 29, 30, 31  
Weiss, Stephen J., 9, 10, 12  
White, Ryan, 7  
Winnetka, Illinois, 1