CHEMICAL HERITAGE FOUNDATION

MICHAEL D. COLE

The Pew Scholars Program in the Biomedical Sciences

Transcript of an Interview
Conducted by
Robert Kohler and Naomi Morrissette

at
Princeton University
Princeton, New Jersey

on
1 August 1989

(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 Biomedical Scholar Advisory Committee members.
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MICHAEL D. COLE

1951 Born in Lima, Ohio on August 27

Education

1973 B.A., Physics, Ohio Northern University
1978 Ph.D., Biophysics, The Johns Hopkins University

Professional Experience

The Johns Hopkins University, Baltimore, Maryland
1978-1980 Post-Doctorate, Biology

St. Louis University School of Medicine, St. Louis, Missouri
1980-1984 Assistant Professor of Biochemistry

Princeton University, Princeton, New Jersey
1984-present Assistant Professor of Molecular Biology

Honors

1978-1980 Leukemia Society Postdoctoral Fellowship
1984-1988 American Cancer Society Faculty Research Award
1985 Pew Scholars Award
ABSTRACT

Michael D. Cole grew up in Ada, Ohio, the oldest of four children. His father was an insurance agent, his mother a housewife. He was always interested in science and nature. He was good at math and physics in high school, so he majored in physics at Ohio Northern University, never taking a biology class. Nonetheless, he found biology more attractive as a career so he entered a PhD program at Johns Hopkins University, starting in Michael Beer’s lab. His thesis involved trying to sequence DNA using microscopy. As a postdoc in Ru Chih Huang’s lab, Cole planned to study immunoglobulin but ended up working to characterize the myc gene instead.

Cole took his first job at St. Louis University, where he used the tumor systems in a “survey” experiment with myc. He found the translocation and translocation breakpoint, publishing results in Cell that were considered a major breakthrough in the study of cancer. He moved to Princeton University, where there was a good molecular biology department headed by Arnold Levine. He has stayed with myc since, still seeking the binding site, but he has two other related areas of interest: finding cofactors necessary for activating tumor growth and studying growth factor receptors.

Cole talks about his personal philosophy; his style; his belief in the necessity for intellectual curiosity in science; serendipity; funding difficulties, especially for long-term projects like his; the problem of invasiveness of tumors. He hopes that in five years he will have found the binding site for myc. He wants to study the biology of the system in order to find out how transformation of cells occurs, but at this point he feels that the technology does not permit it; he will be going to Sweden to try using PCR. Cole concludes the interview with a discussion of the prints and postcards decorating his office.
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Molecular biology still small field. Wanted to do gene regulation. Worked in Ru Chih Huang’s lab. Tried to clone immunoglobulin, but cloned contaminant, mouse retrovirus. Got immunoglobulin later, also by accident, expressed in tumor cells. Others working on immunoglobulin: Susumu Tonegawa, Leroy Hood, Philip Leder.

St. Louis University Years 13
Simian virus 40 paper by Daniel Nathans and Hamilton Smith got him interested in cell transformation. Used postdoc tumor systems in assay from Robert Weinberg paper. Couldn’t identify any gene by doing transfection in plastocytoma DNA. Paper by William Hayward finally persuaded to try “survey” experiment with myc; successful. Still with myc. Found translocation and translocation break point; published in Cell. Ras oncogene mutation mapped; publicity for major cancer breakthrough. Beat other, larger labs; Leder’s lab had found but not recognized. Larger labs do more experiments but not more successful per person. Most contributions by talented people going to best schools and labs. St. Louis and Wake Forest his best job offers. Hopkins’ biochemistry department heavily “German”; Wisconsin chemistry. Department considered molecular biology a fad, not real biology; cloning genetics, not biology. Molecular biology done in medical school and at Carnegie Institution. Biochemistry also got more publicity. Likes teaching. Style hard to define: “bounces around.” Frustration because no conceptual way to go from protein to binding site, but easy to go other way. Now trying PCR to find site.

From St. Louis University to Princeton University 24
Wanted to be in East. Accepted offer from Princeton University. Arnold Levine chair of department; good molecular biology. Prefers not being in medical school. Lab size now smaller. Myc hard. Loner style. Side areas of interest: what else besides myc involved for transformation; also growth factor receptors. Structural biology interesting but does not tell how cell is transformed. Invasiveness. Traditional dogma: myc immortalizes, ras transforms; his lab reverses. Hopes in five years to have found
binding site for myc. Wants to study biology of system; at this point technology does not permit. Funding and long-term projects.

Personal Philosophy and General Thoughts

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