# INAUGURATION





Cover illustration by Joseph Stoddard

# The Inauguration of DAVID BALTIMORE



as President of the California Institute of Technology

> Monday March 9, 1998 2:00 p.m. Beckman Mall

P R E S I D I N G Gordon E. Moore Chair of the Board of Trustees

Organ Prelude Leslie J. Deutsch

PROCESSIONAL The Convocations Brass and Percussion Ensemble & Organ William Bing, Director

G R E E T I N G S From the President of the United States From the Congress of the United States From the Governor of the State of California From the California State Legislature From the Los Angeles County Board of Supervisors From the City of Los Angeles ACKNOWLEDGED BY Walter L. Weisman Vice Chair of the Board of Trustees

From the City of Pasadena Mayor Chris Holden

GREETINGS FROM THE INSTITUTE Founders Martha Throop Smith

Faculty David J. Stevenson Chair of the Faculty

Undergraduate Students Kohl Gill Former President Associated Students of Caltech

Graduate Students Geneviève Sauvé Chair, Graduate Student Council

Alumni Thomas J. Tyson President, Alumni Association

Former Presidents Marvin L. Goldberger (1978–87) Thomas E. Everhart (1987–1997) ADDRESS BY INVITED SPEAKER Maxine F. Singer President, Carnegie Institution of Washington

SONG

"Gaudeamus Igitur" Traditional College Song (c. 1287) Commissioned arrangement by Robert A. M. Ross, 1998

The Caltech Glee Clubs Monica J. Hubbard, Conductor

INVESTITURE OF THE PRESIDENT Gordon Moore, Chair Assisted by Benjamin M. Rosen, Vice Chair Board of Trustees

INTRODUCTION OF PRESIDENT BALTIMORE Kip S. Thorne, Chair Presidential Search Committee

INAUGURAL ADDRESS David Baltimore

ALMA MATER Led by the Caltech Glee Clubs

R ECESSIONAL The Convocations Brass and Percussion Ensemble & Organ

You are invited to attend a reception on the Athenaeum West Lawn following the program.

he costume of those in the academic procession has a specific symbolism that dates back to at least the 14th century. Academic institutions in the United States adopted a code of academic dress in 1895 that has been revised from time to time. The dress of institutions in other countries varies, and there is not a worldwide code, but the basic elements are present in all academic costumes.

Caltech's David Elliot, professor of history, emeritus, has written about academic costume for use in our commencement program, which we are happy to reprint here.

"Of particular interest is the cap or mortarboard. In the form of the biretta it was the peculiar sign of the master. Its use has now spread far beyond that highly select group to school girls and choir boys and even to the nursery school. *Sic transit...* 

"The gown, of course, is the basic livery of the scholar, with its clear marks of rank and status—the pointed sleeves of the bachelor, the oblong sleeves of the master, the full sleeves and velvet trimmings of the doctor. The doctors, too, may depart from basic black and break out into many colors—Harvard crimson or Yale blue or the scarlet splash of Oxford.

"Color is the very essence of the hood: color in the main body to identify the university; color perhaps in the binding to proclaim the subject of the degree—orange for engineering, gold for science, the baser copper for economics, white for arts and letters, green for medicine, purple for law, scarlet for theology, and so on. Size is a further variable, as the hoods tend to lengthen from the three feet of the bachelor to the four of the doctor. So the birds are known by their plumage.

"With this color and symbolism, which is mediaeval though mutated, we stage our brief moment of pageantry, paying homage to that ancient community of scholars in whose shadow we stand, and acknowledging our debt to the university as one of the great institutional constructs of the Middle Ages."

Γ		Chief Marshal Kip S. Thorne		
$\forall$		Convocations Marshal J. Morgan Kousser Nobel and Crafoord Laureates Marshal Rudolph A. Marcus		
Ζ				
		Recipients of the Caltech Ai Distinguished Service Award Alumni Association Chapter and Alumni Association Boa	he Caltech Alumni Service Award, ation Chapter Presidents, ssociation Board of Directors	
S		Marshals Julia A. Kornfield	Thomas R. Palfry	
S		Delegates from Academic Institutions and Learned Societies		
Щ		Honorary Marshal Stephen W. Hawking		
U		MARSHALS David J. Anderson Jean-Paul Revel	Douglas C. Rees Ward Whaling	
0		The Platform Party The Faculty The Chairs of the Divisions		
K		Marshals David J. Stevenson	John E. Bercaw	
Γ		The Provost Officers of the Institute Presidents Emeriti The Trustees Speakers The President The Chair of the Board of T Marshal	RUSTEES	

Daniel J. Kevles

escribed by his colleagues as "subtle," "perceptive," and "keenly insightful about people and complex issues," David Baltimore is perhaps the most influential biologist of his generation. Awarded the Nobel Prize at the age of 37 for his work in virology, he has also had a profound influence on national science policy regarding such issues as recombinant DNA research and the AIDS epidemic. His accomplishments in multiple areas of expertise—as a researcher, educator, administrator, and public advocate for science and engineering—ideally suit him to head up the eclectic, interdisciplinary institution that is today's Caltech.

Baltimore was born in New York in 1938, the older of two sons. His father, Richard, owned a small company that manufactured women's clothing; his mother, Gertrude, was a college psychology professor. While still in high school, he took a summer course at the Jackson Laboratory in Bar Harbor, Maine, where he met then-college senior Howard Temin, one of two other biologists with whom he would later share the Nobel Prize. The course opened the young scientist's eyes to the true nature of the research process. "I discovered," Baltimore later said, "that the frontier of knowledge was actually very close and very accessible."

Baltimore went on to earn his bachelor's degree in chemistry from Swarthmore College in 1960. Moving to Rockefeller University for graduate study, he completed a PhD in biology in a remarkable three years. Postdoctoral positions at MIT and the Albert Einstein College of Medicine followed, as did a three-year stint at the Salk Institute in La Jolla, California (where he also met his future wife). He returned to MIT as an associate professor in 1968, and was named full professor in 1972. Even though Baltimore would not join the Caltech community for another three decades, a connection had been established. Howard Temin, his guru in the Jackson Laboratory summer course, had taken a PhD at Caltech in 1960 in the lab of Renato Dulbecco. Two years later, Dulbecco moved to the Salk Institute, and thus was one of Baltimore's colleagues during his 1965–68 postdoctoral appointment. Dulbecco would become the third corecipient of the 1975 Nobel Prize in physiology or medicine.

At MIT, Baltimore's early investigations focused on questions about the relationships between DNA and RNA in a cell's internal functions—specifically, on how cancer-causing RNA viruses manage to infect a healthy cell. One result of this research was the first identification of an enzyme that allowed a molecule of RNA from a cancer-causing virus to change into DNA—reversing the normal sequence of information flow and then splice itself to the DNA of a host cell. The mystery enzyme was dubbed reverse transcriptase, and its discovery greatly expanded scientists' understanding of what are now known as retroviruses—the most infamous of which is HIV. The existence of reverse transcriptase had been hypothesized some years earlier, but the theory was considered far-fetched until June 1970, when Baltimore and Temin published back-to-back papers about their independent and simultaneous discovery of the enzyme. Baltimore and his laboratory colleagues have since tackled such questions as how white blood cells decide which antibodies to manufacture and how proteins called transcription factors turn genes on and off while DNA is being assembled in a cell. The results of their research have been published in more than 500 peer-reviewed journal articles to date.

In addition to this extraordinarily fruitful research career, Baltimore also has several outstanding administrative and public policy achievements to his credit. In the mid-1970s, with Paul Berg, Maxine Singer, and several other eminent biologists, he played an important role in creating a consensus on national science policy regarding recombinant DNA research. This effort helped to allay the public's reservations about genetics research and to establish research standards that are still followed by the scientific community. In 1982, Baltimore became founding director of MIT's Whitehead Institute for Biomedical Research, a position he held until 1990. In the early 1990s, he was one of the architects of the \$1 billion Human Genome Project, for which Whitehead received the largest single federal grant ever awarded for gene mapping. Baltimore also became an early advocate of federal AIDS research when a national commission that he chaired in 1986 found the government's attempts to deal with AIDS woefully inadequate. He was appointed in 1996 to head the National Institutes of Health AIDS Vaccine Research Committee, a position he plans to retain and "pursue with unabated vigor" while president of Caltech. He was also a professor at Rockefeller University from 1990 to 1994, and Rockefeller's president in 1990–91.

Besides the Nobel Prize, Baltimore's numerous honors include the 1970 Gustave Stern Award in Virology; the 1971 Eli Lilly and Co. Award in Microbiology and Immunology; and the 1974 National Academy of Sciences' United States Steel Award in Molecular Biology. He was elected to the National Academy of Sciences in 1974, and to the Pontifical Academy of Sciences in 1978. (In 1981, he was one of four scientists selected by Pope John Paul II to carry a warning about the dangers of nuclear weapons to President Reagan.) He is a fellow of the American Academy of Arts and Sciences and the American Association for the Advancement of Science, a foreign member of England's Royal Society, and a fellow of the American Academy of Microbiology. Baltimore has been married to Alice Huang, herself a distinguished biologist and former dean for science at New York University, since 1968. They have one daughter, Lauren, who recently graduated from Yale and now works in New York City.

As Caltech Board Chair Gordon Moore said when announcing Baltimore's appointment, "In the coming decade, there may be rapid and remarkable changes in the relationships between research universities and government, industry, and society. Dr. Baltimore's wisdom and his proven abilities . . . make him an outstanding choice to lead Caltech through this period of change." The campus community looks forward to working with its new president to ensure that the Institute's reputation for excellence continues far into the new millennium.

#### MAXINE F. SINGER

urrently president of the Carnegie Institution of Washington (Washington, D.C.), Maxine Singer is also an eminent biochemist whose wide-ranging research on RNA and DNA has greatly advanced scientific understanding of how nucleic acids behave in viral and human genes.

Dr. Singer received her bachelor's degree from Swarthmore College (1952) and her PhD from Yale University (1957), and then accepted a postdoctoral position at the National Institutes of Health. She stayed on at NIH as a research biochemist in the Institute of Arthritis and Metabolic Diseases until 1975, studying the synthesis and structure of RNA. In 1971–72, pursuing a new interest in animal viruses, she took a year's sabbatical to study at Israel's Weizmann Institute of Science. In 1975, she moved to the National Cancer Institute, where she continued the work with simian virus 40 that she had begun in Israel. These investigations led to an interest in primate genomes, and ultimately to her discovery of a transposable element, or "jumping gene," in human DNA. In recent years, much of her research has focused on LINE-1, one of a large family of repeated DNA sequences. Singer holds the title of scientist emeritus at NIH, and has continued to work in her NIH lab while serving as Carnegie's president. Singer's commitment to influencing public awareness of scientific issues has long been evident. In 1975, for example, she was one of the organizers of the Asilomar conference, which drew up the nation's first guidelines for recombinant DNA research. Since joining the Carnegie Institution in 1988, she has developed training programs for teachers of elementary-school science and started First Light, an imaginative Saturday science school for third- through fifth-grade students.

A member of the National Academy of Sciences and its Institute of Medicine, Singer has also served on the editorial boards of several scientific journals, and on the governing boards of Yale and the Weizmann Institute. She received the Distinguished Presidential Rank Award, the highest honor given to a civil servant, in 1988, and in 1992 she was awarded the National Medal of Science for her "outstanding scientific accomplishments and her deep concern for the societal responsibility of the scientist."

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1955 Harvey Mudd College Jon C. Strauss

1960 The Salk Institute for Biological Studies Renato Dulbecco

1969 University of Alabama, Birmingham W. Ann Reynolds Learned Societies

1744 American Philosophical Society John D. Roberts

1817 New York Academy of Sciences Victor Wouk

1888 American Mathematical Society Michael Aschbacher

1899 American Astronomical Society Maarten Schmidt

1900 Association of American Universities Cornelius J. Pings

1919 Huntington Library, Art Collections, and Botanical Gardens Robert Allen Skotheim

1969 American Society for Cell Biology Marianne Bronner-Fraser

1979 The Planetary Society Louis Friedman

#### Nobel and Crafoord Laureates

Seymour Benzer Crafoord Prize in Biosciences, 1993

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Renato Dulbecco Nobel Prize in Physiology or Medicine, 1975

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Gaudeamus igitur Juvenes dum sumus, Post jucundam juventutem, Post molestam senectutem, Nos habebit humus.

Ubi sunt qui ante nos In mundo fuere? Transeas ad superos Abeas ad inferos Quos si vis videres.

Alma Mater floreat, Quae nos educavit; Caros et commilitones, Dissitas in regiones Sparsos, congregavit.

Vivat academia, Vivant professores, Vivat membrum quodlibet, Vivant membra quaelibet, Omnes sint in flore. So let us rejoice while we're young Singing out in gleeful tones; After youth's delightful frolic, And old age (so melancholic) Earth will cover our bones.

Where are those who trod this globe In the years before us? They in hellish fires below, Or in Heaven' kindly glow, Swell th' eternal chorus.

May our Alma Mater thrive, A font of education, Friends and colleagues, where're they are, Whether near or from afar, Heed her invitation.

Long live our academy, Professors whom we cherish; Long live all the graduates And the undergraduates; Ever may they flourish.

### CALTECH ALMA MATER

by Manton Barnes, BS '21 EE

In Southern California, with grace and splendor bound, Where the lofty mountain peaks look out to lands beyond, Proudly stands our Alma Mater, glorious to see. We raise ours voices proudly, hailing, hailing Thee! Echoes ringing, while we're singing, over land and sea; The halls of fame resound thy name, noble CIT!