

**GIUSEPPE ATTARDI
1923 – 2008**


Giuseppe Attardi, whose work linked degenerative diseases and aging to genetic mutations, died at his home in Altadena on Saturday, April 5. He was 84 years old.

Attardi, Caltech's Steele Professor of Molecular Biology, was among the first scientists to delve into the processes through which DNA's information is transferred. He identified all the genes in the DNA in human mitochondria—the organelles in plant and animal cells that help convert food into energy. He then developed techniques for investigating genetic diseases, including Alzheimer's, and for studying aging in general, which he discovered is associated with changes in mitochondrial DNA (mtDNA).

Born in 1923 in Vicari, Italy, a Sicilian town of fewer than 3,000 people, Attardi earned an MD from the University of Padua in 1947. He remained there for almost 10 years as an assistant professor in the Institute for Histology and General Embryology.

Attardi visited Caltech on a Fulbright Fellowship in 1959–1960. He returned for good in 1963 as an assistant professor of molecular biology and was promoted to associate professor that same year. It was at Caltech that Attardi turned his interests to mito-

chondria, establishing that mtDNA is an active, working genome, independent of the genomes of the cells in which the mitochondria reside. This spurred research into the organelle's genetic machinery.

Associate Professor of Biology David Chan calls Attardi a leading figure in identifying the products and functions of the mitochondrial genome. Attardi and a student developed a technique in which they replaced the mtDNA of a human cell line with the mtDNA from diseased cells. This allowed them to distinguish the roles of mtDNA and the genome of the nucleus—where the rest of a cell's DNA resides—in causing the disease. With this technique, they could also examine the relationship between changes in mtDNA and changes in cell function caused by the disease. "Many labs have used his approach to understand how mutations in mtDNA diseases affect mitochondrial function," Chan says.

"Giuseppe was one of the founders of what is now a central and still-expanding area of molecular cell biology," adds Attardi's colleague and friend Gottfried Schatz, emeritus professor of biochemistry at the University of Basel's Biozentrum, in Switzerland. "His unique insights bore

magnificent fruits with the landmark description of the transcription map of mammalian mtDNA, as well as the precise characterization of the mechanism of mitochondrial diseases and the dynamics of human mitochondrial genomes."

In recent years, Attardi's lab has focused on how mtDNA replicates, on detecting mutations that result from aging, and on discovering what effects those mutations have. The team found that older people carry a significantly greater number of genetic defects in a specific region of their mtDNA, suggesting that cell aging begins in the mitochondria.

"He has been a central figure in mitochondrial research for several decades. One of the things I will always remember about him is his constant excitement for all types of biological questions," Chan says. "I think his intense curiosity is one reason he accomplished so much as a scientist."

Schatz adds, "To him, science was everything, and he never tired of discussing the latest experiments. Yet he also embodied a vanishing breed of scientists whom I would define as 'gentlemen intellectuals.' He had a superb grasp of European history and

world culture, had mastered French and German at a very high level of proficiency, and even in his most spirited discussions refrained from personal invective or overt aggression. To me, he was an example of how science can keep us young in spirit, and ennoble us."

Attardi's awards include two Guggenheim Fellowships; election to the National Academy of Sciences; the Antonio Feltrinelli International Prize for Medicine from the Accademia Nazionale dei Lincei; the Passano Foundation Award in 2000; and the Gairdner Foundation International Prize.

Attardi is survived by his wife and colleague, Anne Chomyn (PhD '79), senior research fellow, emeritus; a son, Luigi Attardi, of Rome; a daughter, Laura Attardi, of Palo Alto, who is a professor of cancer biology at Stanford University; and a grandson, Marcello Attardi, of Palo Alto. □—EN

**J. KENT CLARK
1917 – 2008**

On Friday, May 2, Professor of Literature, Emeritus, J. Kent Clark—Caltech’s own Tom Lehrer—had his final show at the Athenaeum. The celebration of Clark’s life (he had died of heart failure on March 3) played to a packed house and included live performances of six of Clark’s songs, including “The Richter Scale,” which has had nationwide airplay on the Dr. Demento Show. (For the lyrics, see E&S 2007, No. 1, page 43.) Between numbers, colleagues and family members told—largely in his own words, as culled from his oral history and other sources—his story and the story of the Caltech Stock Company, formed in a time when life was slower and faculty members had the leisure to rehearse musical revues.

Justus Kent Clark was born on September 29, 1917, on the Utah-Idaho border. Emcee Michael Boughton (BS ’55) introduced him thus: “I had two polygamist great-grandfathers. One of them [Clark’s namesake, Israel Justus Clark] and one grandfather spoke Shoshone better than the Shoshones. Among the first sounds I remember are the howl of coyotes and the blast of my father’s 16-gauge Remington as he shot sagehens to feed the threshers. Well, Rod [Rodman Paul, a history professor and expert on the American West] and I used to discuss frontier topics once in awhile, and one day he said, ‘Kent, why don’t you write Western History?’ I said, ‘Rod, I don’t *have* to write Western History; I *am* Western History.’”

Clark’s father was a wheat farmer who lost the property in the post-World-War-I agricultural depression, forcing the family to move first to Brigham City and then Ogden, Utah. Recalled son Jeff, “Dad spent many summers living with his mother’s family on the Kent farm. Here he was exposed to the legendary Kent fondness for traditional music, music that would tell stories.” Clark’s own aptitude surfaced early—in the fourth grade, he, with big sister Mary on the piano, “won second prize and the then-munificent sum of two dollars and fifty cents (about \$40.00 these days)” in a talent show.

Clark studied English at Brigham Young University. In the spring of his junior year, he decided to forego his usual summer job at a grain elevator for something more fun. He wrote, “Utah Parks, which ran Bryce [Canyon National Park], hired kids there—college kids—to be bellhops and waitresses and so on, and the kids put on shows every night. They were really hired for their musical talent.” So he worked up “a repertoire of songs, including some hillbilly numbers” with a couple of friends, hitchhiked 250 miles to Cedar City, and talked his way into a job for the three of them—sans audition. He met his first wife, Ora “Christie” Christensen, at BYU; they married in 1939, just in time to go to Stanford, where he had been accepted into the English doctoral program.

Upon passing his orals in 1943, he got drafted and sent to radar school in

“Clark and Davis, shows written while you wait.” Elliott Davis, at the piano, and Kent Clark—also frequently known as “Man Super”—work up some material in this 1960s photograph.



Tampa, Florida, “home of cockroaches and mosquitoes, but nicer than, say, Iwo Jima or Normandy.” As a second lieutenant, he served as supply officer for a radar outfit in the Philippines and honed his bridge game. “The electrical engineers of the Battalion could all count to thirteen, and [we] played bridge every night.”

Clark returned to Stanford upon his discharge, but grading papers for composition classes left no time for his own research. Caltech offered him an instructorship in 1947. “They doubled my salary and halved the size of my classes, and they had the Huntington Library a mile away, where I could do my doctoral dissertation on Jonathan Swift’s politics. I thought I would return to Stanford after the dissertation was done, but . . . I made a wonderful discovery. Caltech undergraduates were actually bright across the board—with higher verbal aptitudes than the students at Stanford.”

The couple had three children, daughter Kay and sons Jeff and Don, born at four-year intervals. Said Don, “Dad’s motto was, ‘No two in college at the same time.’”

Don described Kent’s reentry into showbiz. “Dad recalls, ‘In 1953, when my

daughter was at Allendale Elementary, we put on a PTA show. A talented clown named Elliott Davis, who plays the piano brilliantly and has a fine musical imagination, and I got together and wrote the first of three shows for Allendale.’ Elliott was a self-described ‘kept lawyer,’ working for a large insurance underwriter, who had worked his way through college playing piano and banjo. My dad would often present him with words and a skeletal tune, which Elliott would enhance and wrap chords around.

“One of my favorites from the PTA shows is ‘Give Us Men,’ sung by women about the benefits of getting men to turn up at PTA meetings. I’ve always admired this refrain: ‘Teas don’t please us, please don’t tease us, we won’t go there./We won’t meet unless you seat a man or so there.’”

Word got around, and in 1954 Clark was asked to organize *The Road to Stockholm* in honor of chemistry professor Linus Pauling’s (PhD ’25) first Nobel Prize. He dragged Davis in, of course, and the next year *This is Science*, performed for a meeting in Pasadena of the American Association for the Advancement of Science, drew 1,500 people. “As my dad says, ‘It was the first full-

length show we did. From there it was like getting into sin.”

And thus was born the Caltech Stock Company, composed of faculty, staff, students, and spouses—“the brightest cast in show business,” Clark used to call them. Over the next 20 years, the company would perform 10 full-length musicals, and innumerable special shows, with Clark and Davis doing book and music.

Clark wrote, “I had stumbled into an egghead’s paradise and an inexhaustible source of musical comedy. . . . Besides its own vocabulary, where ‘troll’ means what is now ‘nerd,’ Caltech has the wacky, bright, polysyllabic vocabulary of science.

“Now, the Caltech Stock Company was a special subset of the Caltech family devoted to musical comedy, to honoring our great friends, and

to explaining the family to itself. . . . You don’t become a real member of the Caltech faculty and family simply by signing a contract and showing up. . . . You know you’ve arrived when you quit saying ‘those flakes’ and start saying ‘our flakes.’”

Clark’s lyrics were uniquely erudite, said Don—for example, in “Los Angeles,” (*What Makes Beadle Run*, 1961) “The air they breathe is loaded with ozone and tar/The bees all wheeze, and the birds all have chronic catarrh.”

Christie Clark died in 1970, and in 1972 Kent married Joanne Straub Goldman, a union that ended in divorce in 1987. In 1992, he married Carol Brunner Pearson, his research assistant at the Huntington Library since 1958.

Emcee Boughton recounted Clark’s self-described “one and only contribution to the happiness of the Hunting-

ton,” abetted by noted Shakespeare scholar Hardin Craig. “When I came to the Huntington, all the men, staff and scholars, wore jackets and ties; and Mr. Gifford (once butler to Henry Huntington) looked positively starved as he sat at the entrance desk. Well, one day when I didn’t have classes at Caltech, which also demanded coats and ties, I came to the Huntington in a sports shirt. You should have heard the buzz. I thought they might throw me out bodily, and staff member Mary Isabel Fry asked, in a stage whisper, if I was wearing my pajama tops. I stuck it out, but it seemed clear that I’d better not try it again. Then the miracle happened. Next day Hardin Craig showed up in a sports shirt—and that was that. Papa Craig ranked just below, or slightly above, the Holy Trinity, and no one dreamed of criticizing him. The dam had broken and from that day to this, men have been wearing sports shirts at the Library.”

Alan Jutzi, the Huntington’s curator of rare books, told how, with Swift as his springboard and the library’s holdings to dive into, Clark became an expert on English history of the late 17th and early 18th centuries. His favorite subjects were Swift’s political enemies, the Whartons—Thomas, the earl, and Goodwin, whom Clark called “the flaky brother,” writing, “If Goodwin Wharton had not existed, he could not have been invented.” This led to two scholarly biographies: *Goodwin Wharton* (1984), and *Whig’s Progress: Tom Wharton between Revolutions* (2004), and a historical novel, *The King’s Agent* (1958), which Clark said “made him rich for three weeks.”

Jutzi also spoke of the Huntington’s lunchtime bridge games, where he claimed Kent and Carol *really* met. A score

of 6,280 points on July 15, 1974, caught the attention of nationally syndicated bridge guru Alfred Sheinwold, who “visited for one hour in 1977 and went away with several games that made his column. The bridge Tzar of all this was Kent . . . followed with no less exuberance by Carol.”

Professor of English, Emeritus, Jenijoy LaBelle, Caltech’s first female professor, who asked to be introduced as both family member and flake, described what Clark called “his greatest contribution to undergraduate education.” She said, “Were it not for Kent, I might not be standing before you today as a member of the faculty. This isn’t the place to speak about my tenure case in the ’70s, but my heart will always be full of gratitude to Kent for his support. . . . He championed me by writing letters, memoranda, and his famous screed. I know that his biography on Goodwin Wharton, published by Oxford, would have come out three or four years earlier had he not devoted so much of his energy and his considerable talent for irony to my struggle.”

Boughton had the last word. “Behind it all, however, was Kent the teacher. We learned that even professors could enjoy life, and we were encouraged to do so also. Somehow the core of talent we were could be enriched, and it didn’t even hurt very much.

“He taught me to read—Homer, Shakespeare, Swift, Joyce, Maugham, Salinger. Even the *Chicago Tribune*. . . .

“With those as implements, he split open a narrow reverence for hard science to let in a world of words to be savored and thought about.”

Clark is survived by his wife, Carol, three children by his first wife, three stepdaughters, four grandsons, and one stepgrandson. □—DS



Some of the cast of *Beautiful Beckman* (1975), the Stock Company’s last full-length musical. In rear, on table, from left: Shirley Marneus, soon to be the founder and director of Caltech’s theater arts program, and Dan Erickson. Middle row, standing: Gary Lorden (BS ’62), associate professor of mathematics; Dave Wood (BS ’41, MS ’46, PhD ’49), professor of materials science; Bill Corcoran (BS ’41, MS ’42, PhD ’48), professor of chemical engineering and vice president for institute relations; Dick Dean (BS ’45), professor of mathematics; Bob Oliver, professor of economics; Ward Whaling, professor of physics; Ed Hutchings, editor of *E&S*; Jim Knowles, professor of applied mechanics. Front row, kneeling: Cynthia Corngold; Clark; Connie Wood; and Jackie Knowles.