



Fridtjof Kavli

endowed 17 institutes, created three prizes, funded seven professorships, and supported many programs around the world that live on as his legacy.

A naturalized American, Kavli was born in 1927 in Eresfjord, a small town near the Norwegian Sea between Bergen and Trondheim. It was there, growing up on the family farm, that he discovered his love of science. As he would reminisce, "I used to ski across the vast white expanses of a quiet and lonely mountaintop. At times, the heavens would be aflame with the northern lights, shifting and dancing across the sky and down to the white-clad peaks. In the stillness and solitude, I pondered the mysteries of the universe, the planet, nature, and of man. I'm still pondering."

From a young age, Kavli was a sharp businessman. During and after World War II, when gasoline was scarce, the teenaged Kavli and his older brother, Aslak, manufactured and sold wood briquettes that could be used to power automobiles and buses. Their business was a success, and Kavli used the profits to finance his education at the Norwegian Institute of Technology (today the Norwegian University of Science and Technology) in Trondheim.

Three days after his graduation in 1955, Kavli left Norway for Canada on the SS *Stavangerfjord* with \$300 in his pocket. After a year there, he headed for his real goal, California. "America was the land of opportunity, and California had the climate," he would say. He spent a year designing sensors for Atlas missiles for a small engineering firm in Los Angeles. Then, as he said, with "Viking courage and adventure in my blood," he decided to set out on his own.

His company, Kavlico, began in 1958 with a short ad in the *Los Angeles Times*: "Engineer seeking financial backing to start own business." Under Kavli's leadership, Kavlico developed a wide range of innovative sensors used on automobiles and on military and space vehicles. By the time Kavli sold it in 2000 for \$340 million, the company had grown to 1500 employees and \$80 million a year in business.

With the proceeds, he established the Kavli Foundation in December 2000 and began his "payback." Kavli was a strong believer in the importance of recycling wealth and in the power of science and technology to better humanity. His deliberate focus on long-term, basic research countered the prevailing trend in federal funding toward research with near-term returns centered on pressing problems. He and the Kavli Foundation have provided a strong, timely, and effective voice for long-term, basic research. He employed the same far-sighted approach to one of his deepest personal concerns—creating a sufficient and sustainable energy future while preserving the environment and confronting climate change.

The Kavli Foundation, guided by Kavli's vision and with the leadership of two effective presidents (David Auston, 2002–09, and Robert Conn, 2009–present) has achieved much in its first 13 years.

There are 17 Kavli Institutes—2 in theoretical physics, 4 in neuroscience, 5 in nanoscience, and 6 in astrophysics—at leading universities around the world, including one in Norway. As we two can testify from our work as institute directors, Kavli's formula was simple: "We don't try to tell the institutes what to do. We try to just select the very best science teams and institutions and support them in what they want to do, and we expect them to choose the very best course of action." His plan has worked extremely well.

The biennial awarding of Kavli Prizes in Astrophysics, Nanoscience, and Neuroscience began in 2008 with all the fanfare of that other Scandinavian prize: an announcement of the prize recipients in May, in Oslo and at the World Science Festival in New York; a prize week in September with a ceremony involving the king of Norway and Alan Alda; a lavish dinner in the Oslo Town Hall; and a medal slightly larger than the Nobel medal.

The Kavli Frontiers of Science symposia for young scientists, which he funded with the National Academy of

Sciences, and the Kavli Futures meetings are symbolic of the long view he always took. He was enormously proud that one of the Futures meetings helped germinate the BRAIN (Brain Research through Advancing Innovative Neurotechnologies) Initiative announced by President Obama last year.

Kavli believed in—and lived—the American dream, saying, "In America, you don't have to know anything; you just have to ask the right question." He met with US presidents and world leaders and served on the President's Council of Advisors on Science and Technology. Among his many honors was the Royal Norwegian Order of Merit for Outstanding Service.

Above all, Kavli was an optimist and a believer in the power of science to do long-term good, and he took great joy in giving back. Basic research has lost a powerful voice and benefactor, Norway has lost one of its most famous sons, and we have lost a dear friend whose enthusiasm, wisdom, and broad smile will long be remembered. Fridtjof Kavli's generous legacy will live on in the institutes, professorships, and prizes he has created and in the future work of his foundation.

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Robert Resnick

Robert Resnick passed away quietly, surrounded by his family, on 29 January 2014 in Pittsburgh, Pennsylvania. Bob was suffering from the various maladies of an advanced age and from mourning the recent death of Mildred, his wife of 67 years.

Bob had a remarkable career as a physicist, physics educator, and author, and his textbooks became the gateway to physics for generations of scientists and engineers. *Physics for Students of Science and Engineering*, written with David Halliday, was released in 1960 by Wiley (see Halliday's obituary in PHYSICS TODAY, January 2011, page 66). The textbook is now in its 10th edition, under the title *Fundamentals of Physics*, and has had several additional co-authors. That classic and Bob's seven other physics textbooks have been translated into more than two dozen



Robert Resnick

languages and used by an estimated 10 million physics students worldwide.

Born on 11 January 1923 in Baltimore, Maryland, Bob studied physics at the Johns Hopkins University, from which he obtained his bachelor's degree in 1943 and PhD in 1949. His dissertation, "Theory of the angular distribution of the nuclear reaction $\text{Li}^6(d,\alpha)\alpha$," was supervised by David Rittenhouse Inglis. Bob began his career as a physics faculty member at the University of Pittsburgh in 1949. There he met Halliday, and they began the collaboration that resulted in the publication of *Physics* in 1960.

In 1956 Bob left Pitt to become a professor at Rensselaer Polytechnic Institute (RPI); for most of his tenure, he served as the Edward P. Hamilton Distinguished Professor of Science Education. RPI founded the Robert Resnick Center for Physics Education and created the Robert Resnick Lecture Series to honor his career. At his retirement from RPI in 1993, the American Association of Physics Teachers (AAPT) helped organize an international conference on physics education in his honor that drew physicists from around the world. Many of them had been introduced to the subject through *Physics* and its iterations, which in 2002 the American Physical Society named the "most outstanding introductory text of the 20th century."

For most of us, being able to mentor a few people is one of the great gifts in life. But Bob, a tremendous teacher, mentored millions—not only us and many of our fellow physicists who interacted with him personally, but countless others through his textbooks.

At the inception of the US International Physics Olympiad team in the mid 1980s, Bob agreed to help train the top 20 students, who were selected through a national exam. On the first day of training, held at the University of Maryland, we asked the students how they came to study physics—in particular, which text they studied from. Not surprising for that time, they all mentioned a version of "Resnick and Halliday." Then one of us introduced Bob, "the flesh and blood version." The response to his entrance could probably only have been rivaled by introducing a pop star to a group of preteens.

Bob's reputation knew no geographic or political boundaries. As part of the improvement in US-China relations in the late 1970s, Bob was part of the team that helped set up physics exchanges. During his time in China, he discovered that many of the physicists and science students he met, regardless of what country they were from, had studied from his text. Bob never minded that he did not get royalties in some countries. He was simply glad that students had the opportunity to learn.

Bob was also a collector of limericks in every form—from the most scientific to the most inappropriate—and published a book and several articles on them. He was a legend among the students at RPI. One group of students, who considered themselves experts in limericks, invited Bob to a limerick duel. The students were long exhausted when Bob was just hitting his stride. He also once gave an exam in which the students were asked to complete limericks about physics. His ability to come up with a limerick on the spot for virtually any person's name often left his listeners astounded—and occasionally shocked!

In 1975 AAPT honored Bob with its highest honor, the Oersted Medal. He served as an officer in the American Physical Society, the American Institute of Physics, and AAPT, including as its president in 1987–88. His time as an honorary visiting professor to the People's Republic of China in 1981 and again in 1985 helped to reinforce the growing physics cooperation between the US and China.

Bob and Mildred regularly attended concerts at the Tanglewood music venue in Massachusetts and the Saratoga Performing Arts Center in New York. His love for classical music was only exceeded by family, physics, and limericks—in that order. He still found time to be a passionate fan of the Baltimore

Orioles and an ardent supporter of his alma mater, Johns Hopkins. Whatever he accomplished was always aimed at helping someone else to succeed. At that he was an enormous success.

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Boston

James H. Stith
Mitchellville, Maryland ■

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