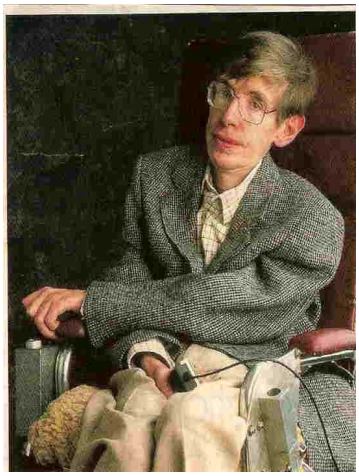
STEPHEN WILLIAM HAWKING

Without question one of the most celebrated scientists and greatest minds of the present time is British theoretical physicist **Stephen William Hawking**, whose work helped to reconfigure models of the universe and to redefine what's in it. In addition to being a brilliant scientist, Hawking is a great popularizer of science. He was born January 8, 1942 in Oxford, England. When he was eight, his family moved to St. Albans where Hawking attended school, planning to specialize in mathematics in his last couple of years, but his father persuaded him to make chemistry his main subject with an eye towards medical studies. Hawking's father wanted his son to attend his school, University College, Oxford, and as that College had no mathematics fellow, Hawking took up the study of physics.



After getting his degree in 1962, Hawking moved to Cambridge University where the 21-year-old graduate student in general relativity and cosmology was diagnosed with ALS (amyotrophic lateral sclerosis) or Lou Gehrig's disease, a neuromuscular disease that progressively weakens muscle control. Doctors gave him about two years to live. He not only exceeded their estimate, but also earned his doctorate, married, had three children, was appointed a Fellow at Gonville and Caius College, Cambridge, and became the best known of the world's leading theoretical physicists. In 1973 he joined the Applied Mathematics and Theoretical Physics department at Cambridge, where in 1977 he became Professor of Gravitational Physics. Since 1979, Hawking has held the post of Lucasian professor of mathematics at Cambridge University. The first one to hold this chair was Sir Isaac Barrow, followed in 1663 by his student Sir Isaac Newton.

Hawking has worked on the basic laws that govern the universe. With Roger Penrose (1931 -), he

showed that Albert Einstein's General Theory of Relativity implied that space and time had a beginning in the Big Bang and an end in black holes. From this they concluded that it was necessary to unify general relativity with quantum theory. Hawking discovered that black holes should not be completely black, but should emit radiation and eventually evaporate and disappear. He said of his research on black holes, that it seemed a bit "like looking for a black cat in a coal cellar." Among his conjectures is that the universe has no edge or boundary in imaginary time. If so, this would mean that the universe is completely determined by the laws of science.

Hawking, who lost the use of his vocal chords in 1985, communicates through a computer. A speech synthesizer "speaks" for him after he punches in what he wants to say. Hawking's only objection to the synthesizer is that it gives him an American accent. Hawking's best-selling 1988 book *A Brief History of Time* set a record for the number of weeks on the best-seller list of the *Sunday Times* of London and has been translated into 33 languages. Besides A *Brief History of Time* he wrote the popular *Black Holes and Baby Universes and Other Essays*. Hawking's *The Theory of Everything* (2002) consists of seven lectures in which he lays out the history of the universe, as we know it.

Besides addressing the theories of the origin of the universe and space-time, he poses the questions yet to be answered by modern physics, especially how to combine all the partial theories into a "unified theory of everything." Among the questions that Hawking and other cosmologists try to answer as they seek a "theory of everything" are the following: 1) Is the universe finite or infinite? 2) How and when did the universe begin or did it even have a beginning? 3) Was the universe created? If so, how? If not, how did it get here? 4) Who or what governs the laws of nature? Are these laws the product of chance or design? 5) Is there any knowable existence beyond the known dimensions of the universe? And 6) Will the universe always expand or will it eventually run down and recede?

There is a film available about *A Brief History of Time* and a book about making the film. Hawking, famous for his sense of humor, wrote in the introduction of the second book, “This is the book of the film of the book. I don’t know if they are planning a film of the book of the film of the book.”

Quotation of the Day: “However, if we discover a complete theory, it should in time be understandable by everyone, not just a few scientists. Then we shall all, philosophers, scientists and just ordinary people, be able to take part in the discussion of the question of why it is that the universe and we exist. If we find the answer to that, it would be the ultimate triumph of human reason – for then we should know the mind of God.” – Stephen Hawking