

ENGINEERING STAR



Ellen Ochoa: Embarking on the Voyage of Discovery

[By Akbar Ali]

Ellen Ochoa is a woman whose professional and personal impact has left a sizable imprint in a number of ways. She is, most notably, the first Hispanic American woman to fly in space. She is also a highly accomplished engineer, researcher, inventor, musician, and youth advocate who serves as a role model for all who believe in the ideal of personal excellence. Currently, she serves as NASA's director of flight crew operations and is poised to take over the Johnson Space Center as deputy director in 2010 after the end of the STS-120 Space Shuttle Program.

Born May 10, 1958, in Los Angeles, Ochoa grew up in La Mesa, California, where she attended Grossmont High School. Much of her youth was spent dedicated to three things: math, science, and music. She went on to San Diego State University, where she received her Bachelor of Science degree in physics in 1980.

At that point Ochoa was dealing with a common personal dilemma: what to do with her life? She seriously contemplated a career as either a classical flautist or in the business sector. Her mother, however, had other plans, insisting that her daughter pursue higher degrees not only to bolster her academic prowess but to achieve clarity in her professional ambitions. It was a suggestion which would pay off big time in the future.

Ochoa readily admits that her mother's insistence on education was key in laying the groundwork for her career as a pioneer in space technology, affirming, "I tell students that the opportunities I had were a result of having a good educational background. Education is what allows you to stand out."

She went on to Stanford University Graduate School, where she completed both her master's and doctorate in electrical engineering. She spent much of her time at Stanford working on the growing field of optical systems, coming up with her own designs which could analyze and configure what they could "see."

During this time an important milestone was reached in the U.S. space program: Sally Ride became the first American female astronaut, breaking a barrier which just years earlier had seemed insurmountable. Ochoa resolved midway through her upper-level academics that a career as an astronaut would be the ultimate expression of her professional ambition.

Ochoa then moved on to the Sandia National Laboratories in Albuquerque, New Mexico, where she continued her work in optical systems design. During this time she also developed a full-fledged career as a researcher, pioneering an important breakthrough in spacecraft technology which would soon attract the attention of NASA. She successfully created and patented a system that could detect defects in repeating patterns. Ochoa would eventually go on to patent and co-invent three separate optical devices: an optical object recognition method, an optical inspection system, and a noise removal process to be used in images.

Her success in developing these various optical systems and devices brought NASA, which had carefully noted her progress in developing technology that had the ability to further the potential of human space exploration, straight to her. Her inventions could not only improve the quality of collected data but could expand NASA's ability to evaluate the safety and feasibility of its program equipment.

Ochoa, who had seen Neil Armstrong walk on the moon when she was just 11 years old, was accepted into NASA's space training program in 1990, officially completing her training a year later and becoming the nation's first Latina astronaut.

Two years later she boarded the Discovery Space Shuttle as a mission specialist and headed out into the final frontier to observe the earth's ozone layer. She commemorated the historic moment by observing, "I can only imagine the amazement and pride my grandparents would feel, having been born in Mexico in the 1870s and knowing that their granddaughter grew up to travel in space."

She later added that the most important factor in space exploration is that it elicits the strongest individual desire to understand the unknown together, a fact which transcends even the historic nature of breaking down gender and racial barriers in space exploration.

"What everyone in the astronaut corps shares in common is not gender or ethnic background but motivation, perseverance, and desire — the desire to participate in a voyage of discovery."

Ochoa would go on to participate in four flights, logging over 978 hours in space. Though she no longer plans to be a part of any future missions, she does intend to impart to young people across the nation the importance of the space program and



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the necessity of education in all fields. She spends much of her time now heavily involved in research, giving presentations to audiences ranging from astrophysicists to schoolchildren.

Ochoa has also gone on to win a number of awards for her work as an engineer and an astronaut, though the accolades don't end there: in June 2006 a K-8 school in Cudahy, California, was named after her because

students and faculty at the school believed she embodied the qualities which would inspire the pursuit of academic excellence.

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