“It is ok to be afraid, what is not ok is to let fear paralyze you, don’t let fear hold you back from achieving your goals.”

“My mantra is ‘Querer es poder.’ I believe everyone has the potential to do it. They just have to believe in themselves enough to actually do it.”
Commander Marisol A. Chalas
First Latina National Guard Black Hawk Pilot

- Serves as commander for 7-158th Aviation Regiment for the US Army Reserves and recently completed the Strategic Fellows Program at The Institute of World Politics in Washington, D.C.
- Graduated as the best cadet in leadership and was given an academic merit for physical fitness from the Military Institute in Georgia.
- Recognized as the best in her class at the Fort Rucker Army Aviation School and earned over a dozen awards including the Senior Aviator Badge.

“*When I was in flight school, there were over 3,000 pilots that flew Black Hawks. Out of those, there were 120 females.*”

Fun Facts:
- Black Hawk helicopters hold two pilots, two gunners, and over 2,640 pounds of cargo. That is as heavy as a buffalo!
- Black Hawk missions include medical evacuations, surveillance, electronic warfare, and stealth combat.

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Captain Olga E. Custodio
First Latina U.S. Military Pilot and Commercial Airline Captain

- Awarded the Air Education and Training Command Aviation Safety Award for Superior Airmanship.
- Retired Lieutenant Colonel from the United States Air Force Reserves with 24 years of service.
- Retired commercial pilot with over 11,000 hours of flight time on the Boeing 727, Boeing 757, Boeing 767, and Fokker 100.
- Vice President of the Hispanic Association of Aviation and Aerospace Professionals (HAAAP), which inspires Latinos in the San Antonio area to seek civilian and military aviation careers.

Fun Facts:
- The Northrop T-38 Talon was the world’s first supersonic trainer and is still used today!
- The Boeing 727 was built to serve smaller cities with shorter runways and fewer passengers.
- The Boeing 767 has seating capacity for 181 to 375 people to travel 3,850 to 6,385 miles.

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Photo courtesy of Ms. Nicole Sánchez from Project Mujer and Marisol A. Chalas.

Photo courtesy of Fox News Latino and Olga E. Custodio.


First Lieutenant Félix Rigau Carrera
First Puerto Rican Pilot in World War I

Rigau flew a plane similar to this one. Find it at the National Air and Space Museum Steven F. Udvar Hazy Center!

Orlando Figueroa
Former Director of Mars Exploration at the National Aeronautics and Space Administration (NASA)

Known as the “Mars Czar.”
Smithsonian Latino Center

- A paratrooper, postman, and patriot.
- Became the first Puerto Rican pilot, the first Hispanic fighter pilot in the United States Marine Corps, and the first air mailman in Puerto Rico.
- Awarded a World War I Victory Medal, a U.S. Signal Corps Military Aviator Badge, and a Naval Aviator Insignia.
- Became a hero in Puerto Rico during the 1920s, traveling to many Puerto Rican cities by air with local townspeople celebrating his landings with live music and fireworks.
- Became known as “The Eagle of Sabana Grande.”

Fun Facts:

- The famous portrayal of “Uncle Sam” on the left first appeared during World War I.
- Airplanes in World War I were first used for reconnaissance, a mission where they would fly above the battlefield and find out the enemy’s movements and position.
- The Curtiss N-9H was a seaplane version of the famous Curtiss JN-4D trainer used by the U.S. Army Air Service during the First World War.
- The N-9H was withdrawn from the U.S. Navy inventory in 1927 after 10 years of service.

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- Earned a bachelor’s degree in mechanical engineering from the University of Puerto Rico at Mayagüez.
- Named Head of the Cryogenics Technology Section at the NASA Goddard Space Flight Center, located in Maryland, in 1982.
- Under Figueroa’s leadership, NASA’s Mars Exploration Rover project successfully landed some of the most advanced rovers ever created onto Mars in 2004!
- Retired from NASA in 2010 to start the Orlando Leadership Enterprise, LLC, an aerospace consulting company.
- Received numerous awards including the 2008 Smithsonian Latino Center Legacy Award.

Fun Facts:

- The first Mars Rovers (two robotic geologists, or rock scientists) were called Spirit and Opportunity.
- Each weighed almost 400 pounds, the weight of a lion!
- Opportunity can still be found on Mars.
- Mars is the fourth planet from the Sun. It is nicknamed the “Red Planet” because it has rust-colored dust on its rocky surface.
- The largest canyon on Mars would stretch from New York City to Los Angeles. That makes the Grand Canyon look tiny!
- Mars has our solar system’s largest volcano, Olympus Mons. It is almost three times larger than Mount Everest, the tallest mountain on Earth!
Félix Rigau Carrera in his airplane in Sabana Grande, Puerto Rico photo provided by Roane Hunt. Curtiss N-9H photo provided by Smithsonian Collections.

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Meet the Science Expert

“When I was about 9 years old, I remember seeing some astronauts on TV… The American astronauts were getting ready for the repair mission to Skylab, and I drew a rough sketch of how I thought the EVA was going to be.”

“What I always say to… Latino parents is that we… should spend more time with our families and kids… challenging our kids to pursue dreams that may seem unreachable.”
• It took 136 space flights on seven different types of launch vehicles to build the International Space Station (ISS).
• The ISS weighs almost 1 million pounds including visiting spacecraft. That’s as heavy as 500 elephants!
• The station’s surface area is the size of a US football field!

Fun Facts:

Dr. Pablo de León
Argentine Aerospace Engineer and Designer of the NDX-1 Space Suit

• Head of the space suit laboratory at the University of North Dakota.
• Leads several NASA-sponsored projects in space suit systems and human space flight.
• Author of Historia de la Actividad Espacial en Argentina which talks about the history of the space activities in Argentina from 1930 to 1980.
• Received the Orden de Mérito Newberiano medal, given by the Instituto Nacional Newberiano, the aerospace history institute of Argentina.

Fun Facts:
• The NDX-1 space suit, designed by de León, endures very cold temperatures and winds of more than 47 miles per hour!
• The prototype suit costs $100,000.
• The suit is made out of more than 350 materials, including touch honey comb Kevlar and carbon fibers to reduce its weight without losing resistance.

“I was hoeing a row of sugar beets in a field near Stockton, California, and I heard on my transistor radio that Franklin Chang-Díaz had been selected for the Astronaut Corps. I was already interested in science and engineering, but that was the moment I said, ‘I want to fly in space.’” - José Hernández
“Since I was a little girl, I have wanted to be an astronaut. I would tell people at school; and since then, I kept every newspaper article that had to do with missions to outer space and astronauts.”

“I cannot be a person that I am not… I was raised in a family of very strong women and I bring that because that’s how I was raised.”
Thrust is the force your hand creates when you move it rapidly side-to-side. This force is produced by the movement of air under the wings of an airplane, which creates lift. Lift happens by air moving under the wings as the airplane moves forward. When the forward motion is enough to make a force greater than the force of drag, the airplane moves upward. Thrust, created by the engine(s), is more than the force of weight, so the airplane moves forward. Drag is the force created by air resisting the forward motion of the airplane. When the forward motion is enough to make a force of weight, the airplane moves back down. You will feel the effect of this force if you jump off from the floor. Your weight will force you back down.

Importance of Culture and Identity

We all belong to a culture. One definition of culture is the sum of knowledge, beliefs, and behavior that we learn and pass on in our community. We usually express our culture in certain ways, like how we dress, what we eat, what we believe, and how we play.

Introduce your culture and identity in three words:

1. 
2. 
3. 

Dr. Yajaira Sierra Sastre
Puerto Rican Nanotechnology Scientist and Aspiring Astronaut

- Graduated with a bachelor’s degree in chemistry from the University of Puerto Rico at Mayagüez.
- Earned a Ph.D. in nanomaterial chemistry at Cornell University while working as a high school chemistry teacher.
- The only Hispanic among six specialists chosen by NASA for the first Hawaii Space Exploration Analog and Simulation (HI-SEAS) project.

Fun Facts:

- Nanotechnology is the manipulation of matter on an atomic, molecular, and supramolecular scale.
- There are 25,400,000 nanometers in an inch.
- A sheet of newspaper is about 100,000 nanometers thick.

Dr. Sonia Ortega
Program Director and Marine Biologist for the National Science Foundation (NSF)

- Earned her undergraduate degree in Biology from the University of Costa Rica and her Master’s Degree in Zoology from Duke University.
- Involved in the Society for the Advancement of Chicanos and Native Americans in Science (SACNAS), the Ecological Society of America (ESA), SEEDS (Strategies for Ecology Education, Development and Sustainability), and Ninety Nines, the international organization of women pilots.
Airplanes are able to create a force called lift which normally moves them upward.

Lift happens by air moving under the wings as the airplane moves forward.

This is produced by the thrust of the engine(s).

When the thrust created by the engine(s) is more than the force of drag, the airplane moves forward.

When the forward motion is enough to make a force of lift that is greater than the weight, the airplane moves upward.

Drift is the force created by air resisting the forward motion of the airplane.

Swish your hand rapidly side-to-side and you will feel that resistance on your hand.

Weight is the force created by the pull of gravity toward the center of the earth.

You will feel the effect of this force if you jump up from the floor. Your weight will force you back down.
• **LIFT**: An upward force caused by the rush of air over the wings, supporting the airplane in flight.
• **PILOT**: A person who controls the airplane.
• **RADAR**: Beamed radio waves for detecting and locating objects. The objects are “seen” on the radar screen or scope.
• **THRUST**: A forward force.
• **WING**: Part of the airplane shaped like an airfoil and designed in such a way to provide lift when air flows over it.
• **ENGINE**: The part of the airplane which provides power, or propulsion, to pull the airplane through the air.
• **DRAG**: The component of the total air force on a body parallel to relative wind and opposite to thrust.
• **GRAVITY**: Force toward the center of the earth.