

# The STEAM–steinettes Gazette

Jan. 2023  
Astronomy

“

*"All adventures - especially into new territory - are scary."*

Sally Ride

”

## The Life Cycle of Stars

By: Sofia

Did you know that humans are largely formed from the dust of the stars? Surprisingly, that is a fact! A large portion of our bodies and planet are made of elements created during the explosions of gigantic stars. Stars are large celestial bodies mainly composed of the two lightest elements—hydrogen and helium. Although they shine for thousands, if not millions, of years, stars do not last forever. The changes that occur in a star over time, as well as the final stage of its existence, are determined by its mass. The larger its mass, the shorter its life cycle. Stars are formed in a nebula—the massive clouds of gas and dust—and undergo several stages in their life cycle, depending on their mass. If the mass of a star exceeds that of the sun, these stages would be formation, protostar, main sequence, red giants, supernova, and the final stage would be either a black hole or a neutron star. If a star's mass is similar to the sun's, it will undergo formation, protostar, the main sequence, red giants, planetary nebula, and finally, white dwarf. A star's primary purpose is to reach equilibrium, or stability, in which the pressure from fusion within the core equals the force of gravity pushing down on it. In essence, completing this goal allows the star to stay alive.

Read on!





# FEMALE SCIENTIST SPOTLIGHT

By: Jasmine

Angelita Castro-Kelly was the first woman to be Mission Operations Manager (M.O.M) at NASA. Born in 1942, she grew up in Sampaloc, Manila in the Philippines as the youngest of six children. She later graduated summa cum laude valedictorian from the University of Santo Tomas with a bachelor's degree in Mathematics and Physics. Following this, she got a master's degree in physics at the University of Maryland.

In 1990 she became the first Filipino and the first woman to become International Earth Science Constellation Mission Operations Manager at NASA. Her career also included the role of Earth Observing System (EOS) Science Interface Manager. She worked with satellite teams and ground control to ensure requirements were met safely and oversaw the planning of various missions. She worked at NASA for a total of 12 yrs.

In her life she earned a multitude of awards. Among them are the 2006 Goddard Space Flight Center Exceptional Service Award, the 2007 Most Influential Award by the Filipina Women's Network, and the 2007 NASA Honor Award and Exceptional Achievement Medal. She was also recognized with the Manned Flight Program Launch Honoree Award and the Astronauts' Manned Flight "Snoopy" Award. In an interview she said that one of her favorite awards she received was the "Snoopy" award. "Snoopy is associated with space," she said. "Cause he wears a little helmet and was a little mascot for the astronauts." She was granted the award directly by an astronaut and given a trip to Kennedy Space Center to witness a launch in person (Great Ilocanos Interview Series). In 1993, a former president of the Philippines, Fidel Ramos, awarded her a President Award "Pamana ng Bayan" and Alumni Award for science and technology. (FilipinaWomen'sNetwork.org)

On June 7, 2015, at the age of 73, she passed away due to lupus complications. She "broke the glass ceiling" by becoming the first Filipina woman to work at NASA as Mission Operations Manager. She was an inspiring woman who valued hard work and helped pave the path for future young astronomers.

Castro-Kelly's advice: "Get a good education. Do not forget your values wherever you go. Treat people fairly."

ANGELITA CASTRO-KELLY



# The Splendiferous Stick Star!

By: Hitej

Make a star out of broken sticks!

1. First, take 5 toothpicks of assorted colors, and bend them in half without snapping them fully.
2. Once the halves of each toothpick are connected only by a few fibers, put them on a flat surface, the almost-separated ends together.
3. Finally, add some water in the middle (only a few drops as necessary), and watch patiently as your toothpicks take the shape of a splendiferous stick star!

Be a scientist!



# Global Science Happenings

By: Hitej

Spacecraft OSIRIS-REx is scheduled to return to Earth with samples of an asteroid in September 2023.

Approximately 40 minutes before sunrise and after sunset, you may be able to see different planets. In January, Venus is visible on the 31st towards the southwest, 40 minutes after sunset.

SpaceX Crew-6 is launching February 2023 at the Kennedy Space Center.

December 11th at 2:38 AM, SpaceX's Falcon 9 Rocket launched from Cape Canaveral Space Station in Florida, carrying with it 3 satellites/rovers called Lunar Flashlight, Hakuto R, and Rashid Rover, developed in the United States, Japan, and United Arab Emirates, respectively. These are responsible for finding traces of water in the moon's craters, providing information for additional missions, and measuring levels of plasma on the moon's surface.

# ARTEMIS I: A LUNAR LEGACY IN THE MAKING

By: Barros



The Artemis Mission: Get people to the moon, and make sure they can stay.

It's November 16th, 2022, and I'm standing giddy in the driveway, ignoring the cold making my nose pink and bugs trying to bite me. It's almost 2 in the morning, and sticky Floridian air seems eerily still. I'm considering going back inside to check on the NASA livestream I have pulled up, when there! In the distance! The part of the sky that's in the direction of Cape Canaveral begins to turn a beautiful, deep red, and then a bright, burning orange. I stare in awe, watching as the Artemis I rocket boosts itself into the sky, and as it vanishes into nothing more than a dot, unrecognisable amongst the other stars visible above. Jumping and whooping in the street afterwards, I suddenly come to the realisation that that was the first launch I had ever seen with my naked eyes.

As stated previously, the Artemis mission, officiated in 2017, is a long-term mission with the end goal of having a team of humans living on the moon. While the recent Artemis I launch did not send any humans up, as it was merely a test run to see how durable the Orion capsule's heat shield was, it did in fact have three human-like dummies! Two of the dummies were female torsos, and the other was a full male body. Each of these dummies were made of material made to simulate the same stuff human bodies are made of, such as skin and bones. The commander dummy, named Commander Moonkin Campos (after Arturo Campos), was dolled up (pun intended) in a full Orion Crew Survival System suit, with technology on it specially made to detect the amount of radiation the crew was being exposed to in the Orion capsule, which is the part of the craft that is going to transport the future live crew.

Just six days after launch, Orion made its closest Lunar approach, at just 60 miles above the surface. On day 13, the craft reached its farthest distance from Earth at approximately 298,565 miles (480,493.8 km), and began its journey back towards the moon to make its second closest flyby before starting its journey back to Earth. Concluding its historic trip on flight day 26, the Orion capsule made its splashdown in the Pacific Ocean after successfully completing the first "skip entry" (also known as a Non-Ballistic Atmospheric Entry) a craft meant for carrying humans has ever done. In this type of atmospheric entry, the craft dips in and out of the atmosphere multiple times before falling through into the ocean to try to shed as much velocity as possible. This generates a lot of heat, so it was a big focus point for the Artemis team. With the success of this launch, trip and splashdown, the next Artemis mission, Artemis II, is set to launch some time in 2023 and will bring humans up for another test run! With the presumption of Artemis II succeeding in its own mission, the manned Artemis III mission, which aims to bring humans to the moon to stay, is currently set for 2024. Mark your calendars, folks! Each launch is even more groundbreaking than the last!

# Book Review: The Martian by Andy Weir

By: Barros

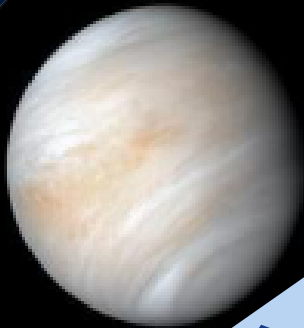
*The Martian* by Andy Weir is a hard science fiction novel that is centered around the main character, Mark Watney, who mistakenly gets left behind by his crew on Mars after being presumed dead. The story follows his adventures through finding different survival techniques to not only survive with limited water, oxygen, and food, but also persevere despite the searing loneliness that accompanies being stranded on a dusty planet far away from home. The plot progresses with the reader becoming more and more enthralled as problem after problem comes into the beloved protagonist's way, and as each time, he manages to outsmart the odds. Hard-hitting and scarily realistic topics are covered with scientific accuracy, blanketed by a generous layer of self-deprecating jokes and dry humor that will make almost any reader smile into the book's pages. With over 35,000 copies of the book sold within the first six months of its official release, *The Martian* is the perfect book for astronomy and adventure lovers alike, with engaging twists, turns and scientific applications that will leave you never wanting to put it down.

Spoilers  
Rating: 2/10

Recommended  
Age: 13+



For a list of possible triggers, visit [doesthedogdie.com](http://doesthedogdie.com) and type in "The Martian". The movie version will appear, and is just as accurate.



## Fantastic Facts!

One day on  
Venus takes 225  
Earth days.

The sun  
accounts for  
99.86% of the mass  
of our solar  
system.

Space is  
completely silent!  
Sound does not  
have a medium or  
a way to travel.

By: Aynsley & Sofia

# Meet the Team

A

STEAM  
Club

+

The  
Einsteinettes

collab

**Ace**

**Aynsley**

**Barros**

**Emme**

**Halee**

**Hitej**

**Jasmine**

**Maddi**

**Sofia**

Special  
thanks  
to our  
awesome  
advisors,  
Ms. Cristen  
Jones and  
Mr. Chad  
Hamblin

## Works Cited

### *Artemis I article:*

"Artemis." NASA, n.d., <https://www.nasa.gov/specials/artemis/>. Accessed 14 Dec. 2022.

Botero, Antonia Jaramillo. "Artemis I Update: Orion Secured Inside USS Portland Ahead of Return to Shore." NASA Artemis, 11 Dec. 2022, <https://blogs.nasa.gov/artemis/2022/12/11/artemis-i-update-orion-secured-inside-uss-portland-ahead-of-return-to-shore/>. Accessed 14 Dec. 2022.

"NASA's First Flight With Crew Important Step on Long-term Return to the Moon, Missions to Mars." NASA, 27 August 2018, <https://www.nasa.gov/feature/nasa-s-first-flight-with-crew-important-step-on-long-term-return-to-the-moon-missions-to>. Accessed 14 Dec. 2022.

"NASA Publishes Artemis Plan to Land First Woman, Next Man on Moon in 2024." NASA, 21 September 2020, <https://www.nasa.gov/press-release/nasa-publishes-artemis-plan-to-land-first-woman-next-man-on-moon-in-2024>. Accessed 14 Dec. 2022.

Beck, Kellen. "Meet the Gender-Inclusive Crew of Dummies Heading to the Moon." Mashable, 30 June 2021, <https://mashable.com/article/artemis-dummies-moon-nasa>. Accessed 14 Dec. 2022.

### *Fantastic Facts:*

Mrkonjic, Elena. "Astronomy Statistics: About Stars, Planets, and Comets." SeedScientific, 1 Nov. 2021, <https://seedscientific.com/astromy-statistics/#cool-facts-about-planets>. Accessed 10 Dec. 2022.

"10 Crazy Facts You Didn't Know About Space." ASU Center for Child Well-Being, Arizona State University, n.d., <https://childwellbeing.asu.edu/SpaceFacts>. Accessed 10 Dec. 2022.

### *Life cycle of a star article:*

"The Life Cycle of a Star." StudySmarter, n.d., <https://www.studysmarter.us/explanations/physics/space-physics/the-life-cycle-of-a-star/>. Accessed 14 Dec. 2022.

"Life Cycle of a Star." Byju's, n.d., <https://byjus.com/physics/life-cycle-of-stars/>. Accessed 14 Dec. 2022.

"The Life Cycles of Stars: How Supernovae Are Formed." Imagine the Universe, NASA, n.d., [https://imagine.gsfc.nasa.gov/educators/lessons/xray\\_spectra/background-lifecycles.html](https://imagine.gsfc.nasa.gov/educators/lessons/xray_spectra/background-lifecycles.html). Accessed 14 Dec. 2022.

"Life Cycle of Stars." Washoe County School District, n.d., <https://www.washoeschools.net/cms/lib/NV01912265/Centricity/Domain/888/PDFpptLife%20Cycles%20of%20Stars.pdf>. Accessed 14 Dec. 2022.

### *Angelita Castro Kelly article:*

Ilocos Norte Tourism. "Great Ilocanos Interview Series- Angelita Castro Kelly (Full Interview)." www.youtube.com, 6 Mar. 2014, [www.youtube.com/watch?v=IH-zJwhYtWc](http://www.youtube.com/watch?v=IH-zJwhYtWc). Accessed 18 Sept. 2021.

"In Memoriam: Dr. Angelita Castro-Kelly, U.S. FWN100TM '07, NASA'S Fearless Filipina Diplomat." Foundation for Filipina Women's Network, [filipinawomensnetwork.org/epahayagan/dr-angelita-castro-kelly-us-fwn100-07-passes](http://filipinawomensnetwork.org/epahayagan/dr-angelita-castro-kelly-us-fwn100-07-passes). Accessed 7 Dec. 2022.

"June 7, 2015, Angelita Castro-Kelly, a Decorated Fil-Am Space Scientist, First Female Mission Operations Manager of NASA Died of Lupus Complications." The Kahimyang Project, 24 Mar. 2022, [kahimyang.com/kauswagan/articles/2744/today-in-philippine-history-june-7-2015-angelita-castro-kelly-a-decorated-fil-am-space-scientist-first-female-mission-operations-manager-of-nasa-died-of-lupus-complications](http://kahimyang.com/kauswagan/articles/2744/today-in-philippine-history-june-7-2015-angelita-castro-kelly-a-decorated-fil-am-space-scientist-first-female-mission-operations-manager-of-nasa-died-of-lupus-complications). Accessed 7 Dec. 2022.

News, ABS-CBN. "Filipina Who Dreamed Big: Space Scientist Angelita Castro-Kelly, 73." ABS-CBN News, 17 June 2015, [news.abs-cbn.com/global-filipino/06/17/15/filipina-who-dreamed-big-space-scientist-angelita-castro-kelly-73](http://news.abs-cbn.com/global-filipino/06/17/15/filipina-who-dreamed-big-space-scientist-angelita-castro-kelly-73). Accessed 18 Sept. 2021.

Yap, Aby. "Angelita Castro-Kelly: NASA's Fearless Filipina Diplomat." Illustrado Magazine - Filipino Abroad, 6 Sept. 2012, [illustradolife.com/angelita-castro-kelly-nasas-fearless-filipina-diplomat/](http://illustradolife.com/angelita-castro-kelly-nasas-fearless-filipina-diplomat/). Accessed 7 Dec. 2022.

### *Global Happenings:*

"Upcoming Mission Events." NASA, n.d., <https://www.nasa.gov/launchschedule/>. Accessed 13 Dec. 2022.

"Calendar of Astronomical Events." In-The-Sky.org, n.d., <https://in-the-sky.org/newscal.php?month=1&year=2023&maxdiff=7#datesel>. Accessed 13 Dec. 2022.

Lawrence, Pete. "See Mars Change its Course in the Night Sky, January 2023." Sky at Night Magazine, BBC, 12 Dec. 2022, <https://www.skyatnightmagazine.com/advice/skills/observing-guide-how-see-planets-january/>. Accessed 13 Dec. 2022.

Dickinson, David. "Trio of Spacecraft Launch for the Moon." Sky & Telescope, 11 Dec. 2022, <https://skyandtelescope.org/astronomy-news/trio-spacecraft-launch-moon/>. Accessed 13 Dec. 2022.