

## Featured Stories



### LabGrown Part 3: The Plant Life That Preceded Us

By Vincent Robbins

*In the third of a four-part series exploring the Lab's flora, we identify some of the common native plants that call JPL home.*

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In 2019, Avionics Engineer Roger Klemm and other JPL Green Club members broke ground on a therapeutic wellness garden on Mariner Road next to the Human Resources trailer. The idea, nurtured over several months and planned with the help of Facilities, was to create a space where JPLers could connect with nature and one another, building community in a calming, restorative setting.

Then the pandemic hit, and the garden went fallow. But not barren.

“[The garden] survived for over two years on rainfall alone,” Klemm says. “Not everything has made it, but most of the things that we planted have lived and thrived.”

We’re not talking 2022-23 rainfall. Those were drought years. And the plants’ survival was no accident.

Klemm, a self-proclaimed native plant geek, and his fellow gardeners chose several native plant species adapted to the arid climates of Southern California and naturally drought-resistant.

Resilience and water efficiency are not the only reasons to be passionate about native plants.

### **The Case for Natives**

“The plants that occupy our cities and suburbs are most often chosen in a haphazard way with no thought given to ecology,” says Evan Meyer, executive director of the Theodore Payne Foundation, a Los Angeles-based nonprofit organization dedicated to the understanding, preservation, and use of California native wildflowers and plants. “Native plants provide the crucial habitat and primary resources that all other land-based life needs.”

Klemm says this was another reason they focused on native plants for the JPL wellness garden.

“The intent is that there be the pollinators and the lizards, the insects, the birds — all the other creatures. There is life there that people can appreciate,” Klemm says. “There’s animation.”



The Arroyo Seco and the mountains beyond are a hotbed for ecological activity, a hum of life that surrounds a place famous for exploring silent alien worlds. According to the California Natural Resources Agency, [about 40% of the plant species](#) that occur naturally in the state grow nowhere else in the world — a staggering level of [biodiversity](#).

This is important beyond the intrinsic beauty of nature; the complex ecological interactions of indigenous flora are vital to a delicate balance of animal wildlife, geological stability, water resources, air quality, agriculture, and even climate. But the region faces a collapse of biodiversity as natural habitats continue to erode under the footprint of human expansion. In 2022, the New York Times [published a map](#) that indicates that California’s biodiversity is the most endangered of any state in the continental United States.

And native plants do more than support the delicate ecological balance of the region.

As the state struggles with perennial water shortages, maintaining ecological communities that can survive on intermittent rainfall is crucial. They also reduce the need for pesticides, minimize carbon emissions by reducing maintenance costs, and even help cool the environment by adding moisture to the water cycle.

Beyond all of these benefits, native plants beautify the landscape to our subjective senses — they create a sense of place, community, and connection to our local history.

### **The Land of the Lab**

A key objective of the City of Pasadena’s [Hahamongna Watershed Park Master Plan](#) is to “restore, enhance, and reestablish the historical native plant communities of the Arroyo Seco.”

There are [dozens of common native plants in the Arroyo Seco area](#). On the larger side, trees provide essential habitats and food for insects, birds, and mammals – from the groves of coast live oaks to the riparian woodlands that are home to native sycamore trees, white alder, and cottonwood. Lower to the ground, mule fat and willow scrub grow in the riparian corridor along streams, and drought-deciduous shrubs like California sagebrush and California buckwheat climb the slopes.



Within the Lab's gates, native plants are not limited to the wellness garden. Although most of the [thousands of trees we have on Lab](#) are not native species, dozens of long-time local residents continue to thrive at JPL (more on the specifics and where to find them on Lab below). And while native plants are pollinated by insects, birds, and the wind, they've also been spread by human hands.

"I've done a fair amount of guerrilla gardening," Klemm says, adding that he did so with permission from JPL Facilities.

Brightview Arborist Liz Velarde and Supervisor Marvin Garcia, two of the Lab's landscaping contractors, say they try to use native, naturalized, and drought-resistant plants when designing new landscaping on Lab. However, Velarde clarified that because office buildings, cafeterias, and Mars yards are not exactly natural soil, it's not always so simple.

"When you start thinking about native plants – native to California? Native to the county? Native to the chaparrals in California?" says Velarde. "A tree that perhaps is good for somewhere deep in the chaparrals and is technically native may not be good for developed land... And there are some trees that are non-native that do well here, too."

In the long term, Klemm and his fellow gardeners hope that a continued focus on native trees and plants will provide the foundation of JPL's landscape, beautifying the Lab, reducing the need for water consumption, and creating an ecosystem in which nature can thrive.

"When I walk around Lab, it's really cool that there are birds in the trees – you hear them and you see them," Klemm says. "And having birds and insects and other creatures in the landscape brings it to life. It animates the landscape. More natives equals more creatures, more life."

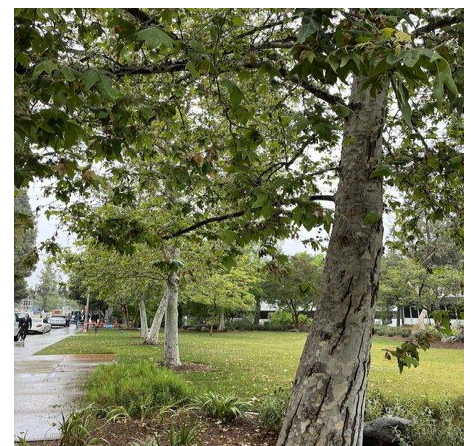
### Your Guide to an On-Lab Native Plants Tour

Enjoy a stroll around Lab and discover the below native species for yourself, thanks to Klemm's guidance and consultation.

#### California Sycamore

Native to California and Baja California, these Sycamores typically grow in riparian zones (the area between land and streams), canyons, floodplains, and along rivers. They usually grow to about 35 meters tall with a trunk diameter of about 3 feet, but Stanford University boasts a California Sycamore with a trunk girth of over 10 feet.

**Find them on Lab:** On the Mall, near the Visitor's Center, and the parking lot behind Building 11.



## Coast Live Oak

Also known as the California live oak, these honorary JPLers are iconic symbols of the Lab's surroundings. These oaks can have multiple trunks and reach heights of 10 to 25 meters. A notable coast live oak in Encino became a historic landmark famed for its ancient age — estimated to be 1,000 years old.

**Find them on Lab:** All over.



## Island Oak

These oaks are native to six islands: five of the Channel Islands of California (Anacapa Island, San Clemente Island, Santa Catalina Island, Santa Cruz Island, and Santa Rosa Island) and Guadalupe Island off of Baja, California. The species is considered a relict — a population of organisms that is currently limited to a restricted area, but whose territory was much wider during a previous geologic epoch — and used to populate a much larger area of California.

**Find them on Lab:** On the slope west of Building 183, between the staircase and Mall.



## Engelmann Oak

Named after George Engelmann, a German-born American botanist, this oak has a smaller range than most California oaks and has been encroached on by urban sprawl in Southern California. Fossils as far as the Mojave and Sonoran deserts show that their territory was far more widespread in the past.

**Find them on Lab:** Up from the main gate, on the east side of Oak Grove Drive, to the north of the director's parking area.



## White Alder

Native to riparian habitats, these medium-sized deciduous trees grow in a wide range from British Columbia, Washington, and Montana, all the way down through the Sierra Nevada to Southern California. Like other alders, these trees are capable of “fixing nitrogen” – a chemical process through which nitrogen is converted into ammonia or other related nitrogenous compounds.



**Find them on Lab:** Formerly found Northwest of Building 183, these Alders have appeared to have aged out, according to Klemm. However, they continue to thrive just outside the East Gate: “The next generation is alive and well in the canyon. A bit battered by the storms earlier this year, but taking it in stride,” Klemm says.

## Monterey Pine

Native to the Central Coast of California and Mexico, this pine is extensively cultivated as plantation timber in many parts of the world. It is technically only native to Santa Cruz, Monterey, and San Luis Obispo Counties – but, as a homegrown Californian, we’ll consider it a JPL native.



**Find them on Lab:** To the northwest of Building 183, north of the Island Oaks.

## Catalina Ironwood

In the rose family, the Catalina Ironwood is native to the Channel Islands of California, where it grows in the chaparral and oak woodlands of the coastal canyons. These trees are often used in landscape design in Southern California, especially when there is a focus on drought tolerance and restoring wildlife habitats.



**Find them on Lab:** Southwest corner of 198 across from 301

## Big Berry Manzanitas

These natives to California and Baja California grow in the chaparral and woodland hills. They produce hanging clusters of narrow urn-shaped white flowers and round or egg-shaped edible fruit. For its size, it's a long-living species — reaching 100 years of age or more!

**Find them on Lab:** East side of 111, 2 big berry manzanitas that Klemm and other Green Club members planted in 2014.





*Image Credit: Courtesy of Dan Goods*

## The JPL Team Behind NASA HQ's New Earth Information Center

By Taylor Hill

A new Earth Information Center is now up and running at NASA Headquarters in Washington, D.C., giving visitors a glimpse – through both informational tools and virtual experiences – into how NASA data aids scientists and decision makers to better understand our changing planet.

Located in the east lobby of the building, the interactive exhibit comes at the request of NASA Administrator Bill Nelson, who wanted the center to be capable of providing an immersive view of Earth, utilizing decades of publicly-available data from NASA satellites.

The exhibit would provide detailed views at the local level of how climate is impacting our lives – from temperature increases in cities, to sea level rise, greenhouse gas emissions, and agricultural productivity.

“For more than 60 years, NASA has used our vantage point of space to observe Earth with satellites and instruments aboard the ISS to collect vital, life-saving data,” Nelson said during a June 21 ribbon cutting. “To meet the Biden-Harris Administration’s goal of making this data more understandable, accessible, and usable for everyone, NASA is opening the Earth Information Center.”

The EIC features a hyperwall display showing data visualizations, animations, and on-the-ground stories of climate change. The center includes an Earth Pulse display, similar to JPL’s Pulse light sculpture in Building 180’s lobby, that shows uplinks and downlinks from NASA’s Earth-focused missions. There is also a soundscape experience – where visitors will hear the sounds of nature as they enter the lobby – and a “Space for Earth” audio-visual immersive experience that surrounds guests on three sides with projections of Earth-based images and data.

It took a small village to pull off the exhibit: JPL’s DesignLab partnered with NASA Headquarters and Goddard Space Flight Center’s Science Visualization Studio (SVS) for many of the components of the EIC, showcasing the value of the group’s collaborations beyond JPL-centric missions and projects.



*NASA Administrator Bill Nelson delivers remarks before the ribbon cutting ceremony to open NASA's Earth Information Center at the NASA Headquarters building in Washington. Image Credit: NASA*

## **A Sense of Magnitude**

The Lab first found out about plans for the EIC when the Administrator put out a release on the idea in late 2021 but had no concrete design yet, according to former JPL DesignLab manager David Rager (now NASA creative director).

"We got a call from [Director of Engagement for NASA] Jenn Sarlin, and they had developed a plan for the hyperwall display that Goddard would run its data and visualizations through, and then they wanted to see if there was something more we could bring to the table."

Dan Goods, manager of The Studio in the DesignLab, immediately got to work. He outlined a plan to reimagine JPL's Pulse sculpture, carve out one of the corners of the lobby for the immersive "Space for Earth" experience, and design a structure around Goddard's hyperwall so it has the feel of viewing portals instead of flat television panels. He also included a 16-foot-long red NASA worm logo outside the lobby doors — an eye-catching strategy for an otherwise nondescript building.

"When you enter NASA headquarters, you don't get the sense of the magnitude of it being the place that aspired to lead the world in space exploration and Earth science," Goods said. "Hopefully this entrance and the EIC bring a bit of that sense of awe to this place."

Rager believes the new features will make the Environmental Information Center more accessible for more individuals.

"We knew the hyperwall was going to have the hard data, infographics, and real-world narrative components, so we wanted the other pieces to be complementary to that," Rager said. "If you were to walk in with your daughter, and your mom, we wanted to create a space that was impactful for whoever came in, at whatever age."

While Goods had experience creating the Pulse sculpture, he hired immersive experience expert Erica Bernhard to lead the "Space for Earth" immersive experience.



Bernhard, who had previously conceived an immersive art installation for Cassini's Grand Finale, said the most important aspect for "Space for Earth" was to create something as engaging as it is informative — a balance between awe and information, using both aspects in novel ways that leave people feeling something, not just learning something.

The team built a free-standing room within the lobby — a 12-foot by 12-foot by 12-foot cube that includes a surround sound system and projections on three walls, all streaming data gathered from Earth satellites such as Landsat, GRACE-FO, and more.

"We have all of this amazing science and so much of it touches the public, it can be hard to create scale around that, and harder still to create a form of science communication that is structurally the most accessible," Bernhard said. "If you go into an installation, and you hear something, you feel something, you see something, and you're interacting with it...what you're creating is something that's going to meet people where they're at. It takes away any socio-economic or access to education barriers. You're inviting people in with curiosity... allowing them to ask questions, draw them in by awe, and follow that with action."



*Erica Bernhard stands amidst the "Space for Earth" immersive experience at NASA Headquarters in Washington. Image credit: Courtesy of Dan Goods*

Bernhard collaborated with Goddard's SVS team to access datasets from various Earth satellites and created visualizations based on the real-world information.

"There's been a lot of talk of atmospheric rivers, but what does that look like?" Bernhard said. "We use the dataset to visually detail an atmospheric river flowing around the individuals standing in the immersive space, just like a river would flow around a person standing in a river — you get a sense of what that data means in a very real way, and we're able to do it while maintaining data fidelity."

In total, the seven-minute-long immersive experience shows guests multiple viewpoints of Earth and the systems humans can impact — from chlorophyll levels to light pollution — and just how connected we are to these data points.

"There are a lot of immersive experiences where you just end up dancing around a lot or jumping to make the visualizations interact with you, but we wanted something where you were surprised and delighted

that something was happening or responding to you," Goods said. "This experience does a great job of pulling that off."

During a walkthrough prior to the ribbon cutting ceremony, Bernhard caught NASA Earth Science Division Director Karen St. Germain's reaction to the "Earth for Space" experience.

"I think there was a tear," Bernhard said with a smile. "And I think that's partly because she knows how many people are working so hard on these missions and projects, and to see their data represented like this, through an emotional experience."

***Can't visit in person? NASA launched an [Earth Information Center website](#).***

*NASA created the Earth Information Center with founding partners FEMA, EPA, NOAA, USAID, USDA and USGS.*

*Other JPL teams that worked on the Earth Information Center include JPL's Earth Science Public Engagement team, which created story narratives for the hyperwall including how NASA data can be used to support communities in the line of hurricanes. And JPL's Visualization Technology Applications and Development team (VTAD) worked on ensuring hyperwall displays were updated daily with latest data from NASA.*

*The EIC in Washington, D.C. is open to the public from 8:30 a.m. EDT to 5:30 p.m. Monday through Friday.*

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*U.S. Poet Laureate Ada Limón reads her poem for the Europa Clipper mission during an event with NASA, Thursday, June 1, 2023, at the Library of Congress in Washington. Image Credit: NASA*

## Oceans in a Poem

By Taylor Hill

On June 1, U.S. Poet Laureate Ada Limón read aloud her poem “In Praise of Mystery: A Poem for Europa” in the halls of the Library of Congress in Washington D.C.

Its aspirational message ties the mysteries extant on Earth, and those we seek in the stars and planets above, to a key life-harboring ingredient: water. With JPL’s Europa Clipper, the mission aims to decisively confirm if an ocean rests below the moon’s icy surface, and will help us better understand the potential habitability of worlds beyond Earth.

As the nation’s official poet, Limón was commissioned to write the poem to Europa as part of NASA’s Message in a Bottle campaign, which invites people around the world to sign their names to the poem. An engraving of the poem and the names will be sent aboard the Europa Clipper spacecraft, launching October 2024, as it makes its 1.8-billion-mile journey toward Jupiter orbit.

For Europa Mission Project Scientist Robert Pappalardo, Limón’s reading signals the starting point of a piece of the mission he’s long been wracking his brain over: how to broadcast the significance of Europa Clipper and its scientific endeavors to the public.

“We wanted to find the right way to connect with the public, and really make it unique to the Europa mission,” said Pappalardo, who has been working at JPL on Europa-based mission concepts since his start at the Lab in 2006.

“I said back then I’d give it three years to try and get a Europa mission going before I’d head back to academia,” Pappalardo said. “Nine years later, we got the green light.”

## Penning the Perfect Message

Through the starts, stops, delays, funding roadblocks, and more, Pappalardo let his mind wander on how to spark the public's imagination regarding Europa. He thought of the Pioneer and Voyager missions, with their gold plaques and records featuring pictorial messages and recordings aimed at extraterrestrial life. He saw the global reach of the Curiosity Rover's "Send Your Name to Mars" campaign. But he wanted something unique, and entirely Europa.

"I had this idea to get small samples of water taken from different oceans across the world to be included and sent along aboard Europa, but there were some planetary protection concerns with that one," Pappalardo said.

Still, the connection to water and a message emphasizing its importance gained traction.

On the solar system public engagement team, Manager Heather Doyle — along with specialists Laurance Fauconnet and Preston Dyches — held brainstorming sessions with the Studio team and others to try and tie in a spin on the "send your name" campaigns from the Mars missions, while including a water-centric message.

"We had this notion of including a message in a bottle component," Doyle said. "You know, we don't throw messages in bottles anymore, because it's littering, but back in the day, there was this romantic element to it — throw your thoughts and wishes in the ocean, and have it connect you to someone somewhere else, through water."

The team knew they wanted a message in a bottle, but what would the message be? Would it be the names of members of the public who signed up? Would the public be expected to write their own love letter to Europa? Or could a voice be found to represent the mission and speak for the public?

That's when Limón entered the conversation.

"What if we could get someone from some place of authority to write something inspiring and unifying?" Dyches remembers thinking. "That would expand the idea of just sending your name, to attaching your name to a message that is hopeful—and something bigger than the individual. Connecting us all in this message in a bottle."

Among potential public figures to ask, Dyches suggested the message might be penned by the U.S. poet laureate. That idea resonated with the group, and after weighing the pros and cons of tapping various celebrities, they agreed that Limón in her appointed position best matched the campaign's goals of providing a unifying voice to the mission.

## A Proposal, and a Partnership

From there, Fauconnet recalls making the connection with the Library of Congress, home to the nation's Poet Laureate since the position's creation in 1937.

"We sent the Library of Congress a letter inviting Ada [Limón] to partner with us, and pretty shortly thereafter, we were jumping on a virtual meeting with her and her team, pitching the idea for a Europa poem," Fauconnet said.

Doyle remembers feeling the positivity and excitement coming from Limón through the screen during that meeting in October 2022.

"I told her I felt like I was asking someone to marry me, and then she said yes!" Doyle said.

Limón went to work on the poem in December, crafting upwards of 20 drafts during a stay at the Merwin Conservancy on Maui. The island location is specifically set aside for artists and poets to utilize as a place of stillness, reflection, and retreat.

In an [interview](#) with BBC, Limón discussed the starting point for the poem, and the expectations of speaking for an entire planet.

“I needed to kind of take the pressure off on some level, of thinking of it as a public poem,” Limón said. “When you work on shutting out the expectations, and you get a draft you’re happy with, now your other self has to say, ‘Is it meeting the expectations? Is it meeting the thing that you wanted or set out to do as an artist?’”

The poem’s reveal, according to Limón, was confronting the unknowns at our front door—not just in Europa’s mystery.

“There are so many wonders here, and in that exploration, we are learning more and more about how we work as human beings, how our planet works, the damage we’ve done,” Limón said. “Looking outward is important, but looking inward towards us, and our planet, and the wonders here are essential to being able to love this world. To keep returning to not just what’s next, but what’s here now.”



*U.S. Poet Laureate Ada Limón standing in the High Bay 1 viewing gallery, overlooking the Europa Clipper spacecraft as it is assembled in the cleanroom. **Image Credit: NASA/JPL-Caltech***

In January 2023, Limón delivered the poem during a visit to JPL, where she met Director Laurie Leshin and members of the Europa team. She toured Mission Control, saw Europa Clipper firsthand under assembly in Highbay 1, and recorded an audio version that JPL Video Producer Lisa Poje used to create a captivating [animation](#).

Now, the poem is out for the world to see and connect with for years to come.

“It’s special, because it’s not just something we’ll run for six months – this partnership between JPL, the Library of Congress and Ada will run all of the way through the launch of Europa Clipper,” Fauconnet said, noting that Limón has been re-appointed for a second, two-year term that runs through 2025.

### **STEM the Artistic Tide**

Sitting at one of the tables on the Mall, Pappalardo scans the art installations nearby—pointing to the Line of Sight pointers, the Frank Malina-inspired patio art outside Building 183, and the uplink/downlink display in Building 180’s lobby.

He reflects on how his early thoughts on collecting water samples shifted to a message in a bottle, and eventually to a poem from the Poet Laureate. How the campaign ties the science aspects to the artistic. How in his own life, he sees the scientific traits of his father melded with the poetic inclinations of his mother. It has become one of the most meaningful undertakings in his lifetime.

“It’s nice to know that something you’ve helped dream up to try and reach people could end up being expanded into something far greater, and reaching more people than we thought possible,” Pappalardo said. “You look around here, and you can see how JPL has a knack for making those connections of science to art. Just as we’re hoping this inspires and connects the public to our mission, I hope this campaign inspires and motivates the whole Europa team, and the work that they continue to do.”

And that’s a message worth receiving.

To sign, read the poem, and hear Limón recite the poem in an animated video, go to:

<https://go.nasa.gov/MessageInABottle>

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# Events



## Von Karman Lecture Series: VITAL Work to Benefit all Humankind

Thursday, July 20  
7 to 8 p.m.

[Watch on YouTube](#)

In response to the coronavirus pandemic, JPL spacecraft engineers worked with medical professionals to develop Ventilator Intervention Technology Accessible Locally (VITAL), a breathing aid that helps critically ill Covid-19 patients and bolstered scarce stocks of traditional hospital ventilators. Learn from JPL Ventilator (VITAL) Operations Lead, Stacey Boland, how this VITAL work went from a conversation over morning coffee to a life-saving machine licensed in 42 countries.

**Speaker:** Stacey Boland, JPL Ventilator (VITAL) Operations Lead, NASA/JPL

**Host:** Nikki Wyrick, Office of Communications and Education, NASA/JPL

**Co-host:** Katherine Park, Office of Strategy and Formulation, NASA/JPL

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# JPL Family News

## Retirees

The following JPL employees recently announced their retirements:

### 30+ Years:

**Robin O'Brien**, Section 394I, 38 years

**Debora Wolfenbarger**, Section 1034, 34 years

**Earl Scott**, Section 3570, 30 years

### 20+ Years:

**Thomas I. McVittie**, Section 312B, 27 years

**Rebecca J. Heninger**, Section 313W, 25 years

**Laura S. Lee, Section**, 2135, 25 years

**Monica Marquez-King**, Section 3513, 25 years

**Mary M. Soria**, Section 386F, 22 years

### 10+ Years:

**Cozette Hart**, Section 1000, 19 years

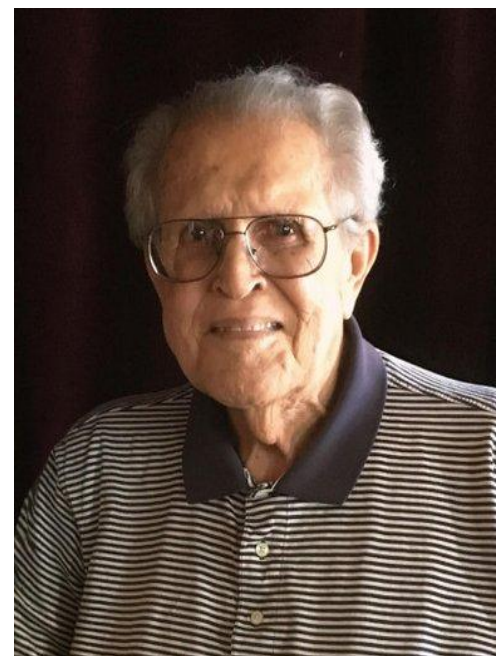
## Passings

**James Lumsden** of La Crescenta, CA, passed away on June 3, 2023, at home surrounded by his family after a hard battle with cancer. Jim worked at JPL for 42 years, retiring as a system safety manager. Jim was an engineer in propulsion at JPL before transitioning to system safety, supporting many flight projects and launch campaigns. Jim enjoyed his retirement years spending time on his ranch at Frazier Park and enjoying the many cruises he went on with his beloved wife and childhood sweetheart, Fae. Jim is survived by his wife; three children, Michael, Shonna, and Shelley; and grandchildren Kaylee and William. He will be sorely missed.

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**Carl W. Raggio**, 94, born on July 28, 1928, in Los Angeles, California, passed away on June 20, 2023. He resided in Valencia, California at the time of his passing. Carl attended Alhambra High School in California and graduated in 1946. He went on to attend John Muir College until 1949 where he met his future wife, Marilyn "Lynne" Lloyd, whom he married on June 9, 1951. He became associated with the California Institute of Technology, Jet Propulsion Laboratory (JPL), the same year when the lab only had three buildings and approximately 300 employees.

In 1953, Carl was awarded a scholarship to Northrop Aeronautical Institute and completed his studies in 1955. He became engaged in the deep space program as a design engineer at JPL during the beginning of its involvement in spacecraft research, development, and design. During his 39 years at JPL, Carl was instrumental in the design and deployment of several landmark space crafts including Explorer 1, the first satellite launched by the United





States into space in 1958 as well as, Pioneer, Ranger, Mariner, Viking, Voyager, and Galileo. During the late 1950s, he and his small team of design engineers at JPL would also become instrumental in advancing the research and design of the heart-lung machine, inspired by his third son, Nicholas, who died of a cardiovascular malformation at a very young age.

During his 39 years at JPL, Carl was credited with three inventions: a Steering System for Solid Propellant Motors, Spatial Antenna Structures, and a Separation Joint. On January 13, 1961, the Design Section, under his leadership, developed a proposal for a Universal Spacecraft Assembly (USA). The major objectives in the USA study were to achieve simplicity and versatility and eliminate redundant structure, requiring every possible part to perform more than one function. It was believed that spacecraft configuration had become too complex, particularly on Ranger. Because of his experience on Explorer, Pioneer, Ranger, and Mariner A, this simple application concept would be considered for Mariner B.

Carl knew that spacecraft design had to meet a number of requirements such as environmental standards, preliminary standard trajectories, launch, flight performance, testing, encounter operations, and applying lessons learned to the next flight. As seen in his collection at JPL, Carl was a man of vision and leadership. In December 1958, he became lead designer of the JII (Juno) Starfinder Program, and in 1975, he became manager of JPL's Engineering Design Section 356. After 39 years of service at JPL, Carl retired on October 1, 1990.

Carl was a ninth-generation Californian and a beloved and exemplary husband, father, grandfather, great-grandfather, friend, and teacher. He is survived by his wife of 72 years, Lynne; his two sons, Carl Raggio III and his wife Mary; Paul Anthony and his fiancé Natalya; and daughter Lisa and her husband Greg Patterson, as well as 15 grandchildren and 8 great-grandchildren, all of whom will continue to live out his powerful legacy.

Funeral arrangements are under the care of Forest Lawn in Glendale. The funeral service will commence at Holy Redeemer Catholic Church located at 2411 Montrose Ave. in Montrose on July 21 at 1 p.m. followed by a Celebration of Life outdoor reception at the Museum Patio at Forest Lawn Glendale. For more information about the service, to read his full bio, or to share a message, please visit <https://obituaries.forestlawn.com/obituaries/carl-raggio>.

# Awards & Honors

JPLers often Dare Mighty Things, and nearly as often earn awards or professional designations. JPL Space will periodically feature a roundup of recent honorees. Please join us in congratulating your accomplished colleagues.

## **Sarath Gunapala**

### **Quantum Devices Award**

For his contributions to the III-V quantum structure infrared detectors and focal plane arrays. The Quantum Device Award was established in 2000 by Fujitsu Quantum Devices, Ltd. The recipients have been selected by the ISCS Award Committee for pioneering contributions to the fields of compound semiconductor devices and quantum nanostructure devices. [Award citation](#)

## **Morgan Cable**

### **2023 Scialog Collaborative Innovation Awards**

Research Corporation for Science Advancement, the Heising-Simons Foundation, the Kavli Foundation, and NASA announce awards totaling more than \$1 million to eight interdisciplinary teams in the final year of Scialog: Signatures of Life in the Universe, an initiative launched in 2021 to catalyze fundamental science in the search for life beyond Earth. Received one award as a member of a funded team. [Award citation](#)

## **Renyu Hu**

### **2023 Scialog Collaborative Innovation Awards**

Elected a Scialog Fellow and received two awards in Scialog: Signatures of Life in the Universe as a member of two funded teams. [Award citation](#)

## **Bonnie Teece**

### **The Voisey Medal**

Awarded by the Geological Society of Australia every two years to an early-career Earth scientist who has made a significant contribution to the Earth Sciences in Australia. [Award citation](#)

## **Nacer Chahat**

### **WAMS Society Life Fellow**

WAMS Life Fellow is given to a professional in the area of Wireless, Antenna, and Microwave who had a significant contribution and societal impact. This award was given to Chahat for his leadership and contribution to spacecraft antennas with a long-lasting track record of successful technology infusion. [Award citation](#)