CARNEGIE SCIENCE

NEWS

Getting the Word Out

a.k.a.Communications

The New York Times

It's the Solar System's Most Distant Object. Astronomers Named It Farout.

Orbiting 11 billion miles from the sun, this tiny world offers additional ch
proposed Planet Nine.

An artist's rendering of 2018 VG18, nicknamed "Farout," which is more t
the sun as Pluto. Credit Roberto Molar Candanosa/Carnegie I

By Kenneth Chang

- Dec. 17, 2018

Astronomers have discovered a far-out world circling the sun.

How far out? It's so far out that the discoverers nicknamed it "Farout." Al
light in the night sky, but that is enough to infer that they are looking at a
more than 11 billion miles from the sun — more than three times as far ou
object ever observed within the solar system.

It is the latest revelation in a distant region that was once expected to be e
its trajectory may help point to an as-yet-unseen ninth planet circling the

On Monday, the International Astronomical Union's Minor Planet Center
gave this object the designation 2018 VG18.

"Last month, we came across it moving very, very slow," said Scott S. She
Institution for Science, one of the discoverers of VG18. "Immediately we k
object."

Forbes

791 viewsOct 24, 2018, 03:58pm

What Do You Call Moons Orbiting M

Meriame Berboucha Contributor
Science/*Laser Physicist*
TWEET THIS

- There is a debate on what to call a moon orbiting a moon: a submoon or a

There is a debate on what to call a moon orbiting a moon: a submoon or a moonm
about you, but I certainly prefer moonmoon. Does that mean, if there is a moon, o
orbiting another moon it is called a moonmoonmoon?

A moon orbiting another moon is called a moon moon by some and summon by ot

In our Universe, it is common knowledge that moons orbit planets. Due to the grav
objects with mass, certain other objects call fall into stable orbits around them. Th
moons, and other rocky objects can orbit them: moonmoons.

Scientists believe about four moonmoons exist in our Solar System. With Saturn's
Jupiter's moon, Callisto being prime candidates. A new study carried out by scient
observatories at the University of Bordeaux and Carnegie Institution of Washingto
discover some conditions needed for moonmoons to occur in our cosmos.

Moonmoons are most likely to appear around large moons that are quite distance
planets. This is so that they are not torn apart by the planet and also remain in the
moon. What is even more exciting is that according to computer models our own m
candidate for hosting a moonmoon. Even though our moon can host a moonmoon

WIRED

EARTH'S DEPTHS ARE TEEMING WITH OTHERWORL
MICROBES

GETTY IMAGES

This story originally appeared on The Guardian and is part of the Climate Desk colla
The Earth is far more alive than previously thought, according to "deep life" studies th
rich ecosystem beneath our feet that is almost twice the size of that found in all the wo
oceans.

Despite extreme heat, no light, minuscule nutrition and intense pressure, scientists es
this subterranean biosphere is teeming with between 15 billion and 23 billion tonnes
organisms, hundreds of times the combined weight of every human on the planet.
Researchers at the Deep Carbon Observatory say the diversity of underworld species
comparison to the Amazon or the Galápagos Islands, but unlike those places the envir
still largely pristine because people have yet to probe most of the subsurface.

"It's like finding a whole new reservoir of life on Earth," said Karen Lloyd, an associate
at the University of Tennessee in Knoxville. "We are discovering new types of life all t
much of life is within the Earth rather than on top of it."

The team combines 1,200 scientists from 52 countries in disciplines ranging from geo
microbiology to chemistry and physics. A year before the conclusion of their 10-year s
will present an amalgamation of findings to date before the American Geophysical Uni
annual meeting opens this week.

Samples were taken from boreholes more than 5 kilometers deep and undersea drillin
construct models of the ecosystem and estimate how much living carbon it might cont
The results suggest 70 percent of Earth's bacteria and archaea exist in the subsurface,
barbed Altiarchaeales that live in sulphuric springs and Geogemma barossii, a single-c
organism found at 121°C hydrothermal vents at the bottom of the sea.

CNN

Frozen super-Earth discovered six light-years away

By Ashley Strickland, CNN
Updated 6:20 AM ET, Thu November 15, 2018

This image shows an artist's impression of the surface of Barnard's star b, a cold Super-Earth discovered orbiting Barnard's star 6 light-years away.

(CNN)Astronomers have found a frozen exoplanet more than three times the mass of Earth, orbiting a star that's only six light-years away. The exoplanet is orbiting Barnard's star, the closest solitary star to our sun.

This makes it the second closest known exoplanet to us. Previously, an exoplanet was found orbiting in the three-star Proxima Centauri system.

The exoplanet was found after stitching together 20 years of data, including 771 individual measurements, from seven instruments. The analysis that led to the discovery is detailed in astudy published Wednesday in the journal *Nature*.

For years, astronomers thought they would find a planet around the nearby star, but it eluded them.
"The biggest 'kick' about this discovery is the host star," Paul Butler, study co-author and astronomer at the Carnegie Institution for Science, wrote in an email. "Barnard's star is the 'great white whale' of planet hunting."

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What we do

- Market research showed we should change our emphasis to scientific areas, people and projects. Departments were confusing to the outside world. Reorg. will dictate more changes
- Print— Annual Report, 80-90 pages 5,000 mail, 800 e subscribers
  - Newsletter, 12,000 mail, 3,500 e subscribers
  - Miscellaneous Brochures, e.g. lectures, fundraising
  - Review annual appeals, etc..
  - ❖ Write, fact check, picture research/process, deal with scientists, directors/department contacts, hire designers, proofers, printers, and mail house
- Press Releases, Media Relations Natasha/Tina—Tweet, facebook, etc. news 65-70 per year. Natasha will talk more about how to deal with reporters and social media after me.
- Web Content
- Multimedia, John produces, Natasha and I review. YouTube Channel, etc.
- Public information queries, 20-30 per month
- Maintain clippings, interact with president's presentations, etc.

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Examples

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Press Release Basics

General

- We read the scientific papers and create a draft for scientists.
- Press releases are essentially advertisements to reporters.
- The purpose is to get reporters to call or email the scientist.
- All releases go out as emails. The subject/headline has to be short, to the point, and enticing.
- Then the bottom line—the result and why we should care—needs to be in the first short paragraph. **BOTTOM LINE ON TOP**
- Releases should not be too long—400 to 500 words is a good limit.
- We try to **AVOID JARGON**. No one understands it. Plain language is essential. But scientists can be stubborn at times.
- Frequently we coordinate with other institutions.
- Images make a difference and tend to result in more coverage.
- Some grants require outreach and this process counts as outreach.

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Press Release Basics, cont.

Quotes —

- We often draft suggested quotes to give a researcher the idea of the kind of thing reporters look for. You can leave them as is (assuming the information is correct!!!) or alter them.
- Avoid jargon or define it! Basalt sounds like a spice and no one knows what subduction, inclusion, redshift, etc. means

What happens next —

- Once the scientist is happy with the release, it goes to the director for review.
- We must adhere to embargos that many publications have. They state the date when a release can go to the public. You must be sure reporters understand the embargo. That means when reporters can publish their story. Typically we are allowed to send a release out to trusted reporters a few days before the embargo date. That gives them time to do their homework and contact you.
- With on line publications, there are more and more 24 hour turnaround

Press Release Basics, cont.

Where the press releases go—

- We have a number of different press lists, by broad scientific topic that have between 400 and 500 emails. The media outlets range from the major wire services and newspapers, major radio stations, to more specialized publications.
- We also post releases to EurekAlert, the AAAS wire service. They have over 15,000 reporters worldwide signed up for news.
- Astronomy releases also go to the AAS wire service.
- When the embargo lifts we post to social networking sites, and various web-based news outlets. Natasha will speak more to this.

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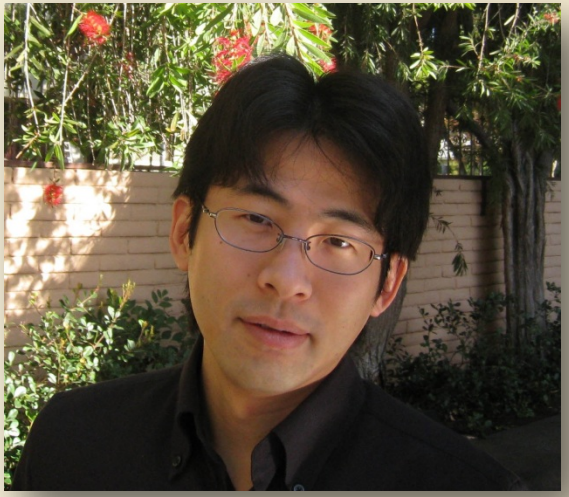
Example—
Space Blob, The Paper



Accepted for Publication in The Astrophysical Journal
Preprint typeset using LaTeX style emulateapj v. 03/07/07

DISCOVERY OF A GIANT LYα EMITTER NEAR THE REIONIZATION EPOCH [1,2]

Masami Ouchi [3,4], Yoshiaki Ono [5], Eiichi Egami [6], Tomoki Saito [7], Masamune Oguri [8], Patrick J. McCarthy [3], Duncan Farrah [9,10], Nobunari Kashikawa [11], Ivelina Momcheva [5], Kazuhiro Shimasaku [5], Kouichiro Nakanishi [12], Hisanori Furusawa [13], Masayuki Akiyama [14], James S. Dunlop [15,16], Angela M. J. Mortier [17], Sadanori Okamura [5], Masao Hayashi [5], Michele Cirasuolo [16], Alan Dressler [3], Masanori Iye [11], Matt. J. Jarvis [17], Tadayuki Kodama [11], Crystal L. Martin [18], Ross J. McLure [16], Kouji Ohta [19], Toru Yamada [14], Michitoshi Yoshida [20]

Accepted for Publication in The Astrophysical Journal

ABSTRACT

We report the discovery of a giant Lyα emitter (LAE) with a Spitzer/IRAC counterpart near the reionization epoch at $z = 6.595$. The giant LAE is found from the extensive 1 deg^2 Subaru narrow-band survey for $z = 6.6$ LAEs in the Subaru/XMM-Newton Deep Survey (SXDS) field, and subsequently identified by deep spectroscopy of Keck/DEIMOS and Magellan/IMACS. Among our 207 LAE candidates, this LAE is not only the brightest narrow-band object with $L(\mathrm{Ly}\alpha) = 3.9 \pm 0.2 \times 10^{43}$ erg s^{-1} in our survey volume of 10^6 Mpc^3, but also a spatially extended Lyα nebula with the largest isophotal area whose major axis is at least $\simeq 3''$. This object is more likely to be a large Lyα nebula with a size of $\gtrsim$ 17-kpc than to be a strongly-lensed galaxy by a foreground object. Our Keck spectrum with medium-high spectral and spatial resolutions suggests that the velocity width is $v_{\mathrm{FWHM}} = 251 \pm 21$ km s^{-1}, and that the line-center velocity changes by $\simeq 60$ km s^{-1} in a 10-kpc range. The stellar mass and star-formation rate are estimated to be $0.9 - 5.0 \times 10^{10} M_\odot$ and $> 34\ M_\odot \mathrm{yr}^{-1}$, respectively, from the combination of deep optical to infrared images of Subaru, UKIDSS-Ultra Deep Survey, and Spitzer/IRAC. Although the nature of this object is not yet clearly understood, this could be an important object for studying cooling clouds accreting onto a massive halo, or forming-massive galaxies with significant outflows contributing to cosmic reionization and metal enrichment of inter-galactic medium.

Subject headings: galaxies: formation — galaxies: high-redshift — cosmology: observations

[1] Based in part on data collected at Subaru Telescope, which is operated by the National Astronomical Observatory of Japan.
[2] Some of the data presented herein were obtained at the W.M. Keck Observatory, which is operated as a scientific partnership among the California Institute of Technology, the University of California and the National Aeronautics and Space Administration. The Observatory was made possible by the generous financial support of the W.M. Keck Foundation.
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1. INTRODUCTION

Identifying the first stage of galaxy formation is one of the ultimate goals in astronomy today. Theoretical models predict that primordial gas accretes onto the center of halos via gravitational cooling with subsequent star-formation activity (Fardal et al. 2001; Yang et al. 2006). These primordial galaxies make spatially extended Lyα nebulae caused by hydrogen cooling, and it is suggested that high-z extended Lyα sources, or Lyα blobs, are candidates for primordial galaxies (e.g. Matsuda et al. 2004; Saito et al. 2006; Nilsson et al. 2006; Smith & Jarvis 2007). Lyα blobs are found mostly at $z \simeq 2 - 3$, and have angular extents of $\simeq 5 - 16$ arcsec with total Lyα luminosities ranging from $\simeq 6 \times 10^{42}$ to 10^{44} erg s^{-1} (Matsuda et al. 2004). The most prominent Lyα nebulae known to date are blobs 1 and 2 found by Steidel et al. (2000), which extend over $\gtrsim$ 100 kpc with $L(Ly\alpha) \simeq 10^{44}$ erg s^{-1}. Although Lyα blobs are candidates for galaxies with gas inflow of cooling accretion, it is also suggested that Lyα blobs can be produced by intensive starbursts associated with significant outflows (e.g., Taniguchi & Shioya 2000; Wilman et al. 2005), by a hidden AGN (e.g., Haiman & Rees 2001), or by both of them (e.g., Dey et al. 2005; Yang et al.

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Space Blob Release

CARNEGIE SCIENCE NEWS

Embargoed For Release Until
3:00PM Eastern US TIME

April 22, 2009

Contact Masami Ouchi, (626) 304-0299, ouchi@ociw.edu
For copies of the paper contact the author

An image of Himiko is at http://www.ciw.edu/http_www_ciw_edu_prouchihimikoimage4_6_09_jpg
For podcast see http://videos.ciw.edu/achilles_movies_download/space_blob.mov
To access spectra see http://www.ciw.edu/prouchielargeobjectspectrapic4_8_09

Mysterious Space Blob Discovered at Cosmic Dawn

Pasadena, CA—Using information from a suite of telescopes, astronomers have discovered a mysterious, giant object that existed at a time when the universe was only about 800 million years old. Objects such as this one are dubbed extended Lyman-Alpha blobs; they are huge bodies of gas that may be precursors to galaxies. This blob was named Himiko for a legendary, mysterious Japanese queen. It stretches for 55 thousand light years, a record for that early point in time. That length is comparable to the radius of the Milky Way's disk.

The researchers are puzzled by the object. Even with superb data from the world's best telescopes, they are not sure what it is. Because it is one of the most distant objects ever found, its faintness does not allow the researchers to understand its physical origins. It could be ionized gas powered by a super-massive black hole; a primordial galaxy with large gas accretion; a collision of two large young galaxies; super wind from intensive star formation; or a single giant galaxy with a large mass of about 40 billion Suns. Because this mysterious and remarkable object was discovered early in the history of the universe in a Japanese Subaru field, the researchers named the object after the legendary mysterious queen in ancient Japan.

"The farther out we look into space, the farther we go back in time, " explained lead author Masami Ouchi, a fellow at the Observatories of the Carnegie Institution who led an international team of astronomers from the U.S., Japan, and the United Kingdom. "I am very surprised by this discovery. I have never imagined that such a large object could exist at this early stage of the universe's history. According to the concordance model of Big Bang cosmology, small objects form first and then merge to produce larger systems. This blob had a size of typical present-day galaxies when the age of the universe was about 800 million years old, only 6% of the age of today's universe!"

Extended blobs discovered thus far have mostly been seen at a distance when the universe was 2 to 3 billion years old. No extended blobs have previously been found when the universe was younger. Himiko is located at a transition point in the evolution of the universe called the reionization epoch—it's as far back as we can see to date. And at 55 thousand light years, Himiko is a big blob for that time.

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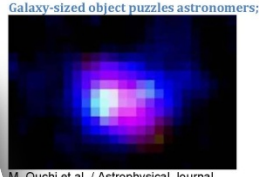
Sample Space Blob Coverage

MSNBC

Giant mystery blob found near dawn of time

Galaxy-sized object puzzles astronomers; is it related to a black hole?



M. Ouchi et al. / Astrophysical Journal
This image of the Himiko object, the most massive object ever discovered in the early universe, is a composite shown here in false color.

BBC NEWS

'Space blob' baffles astronomers

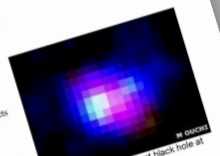
By Jason Palmer
Science and technology reporter, BBC News

It might not look like much, but this image represents one of the most distant objects astronomers have ever seen, 12.9 billion light years away.

It is a "Lyman-alpha blob" and is 55,000 light years across - as large as present-day galaxies. Though younger such blobs have been found, "Himiko" confounds the idea that such large objects grow more recently by the merger of smaller ones.

The research will be published in the Astrophysical Journal.

Current cosmology models hold that between 200 million and one billion years after the Big Bang, quasars and the first stars formed, emitting radiation that stripped light elements of their electrons and turned the Universe into a soup of charged particles.



The blob may have a giant black hole at its centre

"A number of theories of Lyman-alpha blob formation abound, but all are difficult to test"

James Geach
University of Durham

Only after this "re-ionisation epoch" did matter as we now know it start to clump together. Objects as big as modern-day galaxies should have taken significant time to build up from mergers of smaller chunks of matter.

So when a group of researchers led by Masami Ouchi at the Carnegie Institution searched among 207 distant galaxy candidates using the Subaru telescope at the peak of Mauna Kea in Hawaii, they expected to find smaller galaxies.

"We hesitated to spend our precious telescope time by taking spectra of this weird candidate," Dr Ouchi said. "We never believed that this bright and large source was a real distant object."

Massive mystery

The team went on to measure the characteristic emission from hydrogen - the Lyman-alpha radiation of the name - and confirmed the blob was some 12.9 billion light years away.

They then trained the Spitzer Space Telescope, Very Large Array and UK Infrared Telescope on the object to determine how much mass is contained in the blob - or, rather, how much was contained 12.9 billion years ago.

The blob was first noticed by the Subaru Telescope

Himiko - named after a mysterious queen of Chinese and Japanese legend - contains more than 10 times as much mass as galaxies of a similar size.

"There are two possibilities: the standard scenario of galaxy formation is wrong, or this particular object is showing something unique," Dr Ouchi told BBC News.

Several possibilities could explain the massive nature of Himiko: it could have a supermassive black hole at its centre, or it could contain an active galactic nucleus, where a galaxy's worth of stars are forming.

Dr Ouchi said the team was proposing observations using the Keck telescopes in the far-infrared region to establish the rate of star formation happening inside Himiko, and whether star formation could lead to the "nebula" of ionised gas that accounts for its enormous size.

"Many early theories of galaxy formation predicted a Lyman-alpha 'fuzz' around early galaxies," said James Geach, an astronomer at the University of Durham who works on Lyman-alpha blobs.

"The problem is that no-one is entirely sure what mechanism gives rise to the extended emission; a number of theories of Lyman-alpha blob formation abound, but all are difficult to test," he told BBC

Newsweek

Full Post
Posted Wednesday, April 22, 2009 4:55 PM

The Blob That Didn't Eat the Universe

Sharon Begley

It's hard to resist an astronomy discovery when it's called a blob, even if the precise blob. In a paper being published this afternoon in *Astrophysical Journal*, astronome spied such an object—thought to be an enormous body of gas that may be the precu from when the universe was a mere 800 million years old. Stretching for 55,000 lig radius of our Milky Way galaxy's disk), this Lyman-Alpha blob has astronomers s

Named Himiko for a legendary Japanese shaman queen, the blob is not the largest That honor goes to a Lyman-Alpha blob reported in 2006 and thought to be the bi Instead, this one is notable because it is so far away, and in cosmic terms far away we look into space, the farther we go back in time," says astronomer Masami Ou Carnegie Institution , who led the international team that made the discovery: bec velocity, it takes time for light from objects in space to reach the eyes of Earthlin means we are seeing the blob as it was near the dawn of time, when the universe was current age of 13.7 billion years. That means light from Himiko has been traveling toward us for 12.9 billion years, which is equivalent to saying we are seeing it was it was 12.9 billion years ago.

And that makes astronomers a bit uneasy. Whether the blob is ionized gas powered by a supermassive black hole, a primordial galaxy, the collision of two young galaxies or a single giant galaxy with a mass of 40 billion Suns—all of which are on the table—it's too big for its age. As Ouichi puts it, "I have never imagined that such a large object could exist at this early stage of the universe's history. According to . . . Big Bang cosmology, small objects form first and then merge to produce larger systems. This blob had a size of typical present-day galaxies when the age of the universe was about 800 million years old." In fact, other blobs had the decency to wait to show up, appearing when the universe was 2 to 3 billion years old. No extended blobs had been found from when the universe was younger, until Himiko, which means astronomers need to scurry back to the drawing boards to figure out how an object this massive managed to grow up so fast.

CBS NEWS

2009: A Space Oddity; Big Blob In Early Universe

The Blob: Astronomers Marvel Over Mysterious Giant Object From Nearly 13 Billion Years Ago --
WASHINGTON, Apr. 22, 2009
(AP) A strange giant space "blob" spotted when the universe was relatively young has got astronomers puzzled.

Using space and ground telescopes, astronomers looked back to when the universe was only 800 million years old and found something that was out of proportion and out of time. It was gaseous, big, and emitted a certain type of radiation, said study lead author Masami Ouchi, an astronomer at the Carnegie Observatories in Pasadena, Calif.

Scientists don't even know what to call it. So they just called it a radiation-emitting "blob." They used that horror-film staple 34 times in their peer-reviewed study, which will be published in next month's edition of Astrophysical Journal. More formally, they named it Himiko, after a legendary ancient Japanese queen.

The photo of it is beyond fuzzy.

"The puzzle is _ what is it?" said California Institute of Technology astronomer Richard Ellis, who wasn't on the research team but praised the find. "Often a puzzle leads to a breakthrough. My nose tells me that this object is rather special."

Ouchi and Ellis said one possibility is that by chance, astronomers captured the moment a galaxy was forming in the early universe _ something that never has been seen before.

As astronomers gaze deeper into space, they are looking farther back in time. What Ouchi found was from 12.9 billion years ago. Only three other objects have been seen that are from deeper in time and space.

But what's most remarkable about this blob is its size, about as big as the disk-shaped Milky Way. According to many theories of the universe, nothing was supposed to be that big at that time in the universe. The other objects from that period are far smaller, Ouchi said.

Ouchi said it also could be two colliding galaxies, or might have something to do with a black hole.

—

On the Net:

Carnegie Institution for Science paper:

http://www.ciw.edu/news/mysterious_space_blob_discovered_cosmic_dawn

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What Releases Reporters/Public Find Interesting

April 2019 Summary EurekAlert

Title	Post Date/ Emb. Date	Total Page Views	Graph
Diamonds reveal how continents are stabilized, key to Earth's habitability	25-Apr-2019/ 25-Apr-2019	3,077	
Changes in rainfall and temperatures have already impacted water quality	24-Apr-2019	2,465	
TESS finds its first Earth-sized planet	15-Apr-2019	2,820	
Cometary surprise found inside meteorite	11-Apr-2019/ 15-Apr-2019	1,964	
Sea anemones are ingesting plastic microfibers	28-Mar-2019	2,158	
Revealing the plant genes that shaped our world	21-Mar-2019	1,927	
Can we address climate change without sacrificing water quality?	26-Feb-2019	3,622	
Predicting how forests in the western US will respond to changing climate	25-Feb-2019	2,738	
China not 'walking the walk' on methane emissions	28-Jan-2019/ 29-Jan-2019	3,402	
Where is Earth's submoon?	23-Jan-2019	2,858	
	Totals 10 items	27,031	Each unit (–) represents 181 hits

Please Note:

Page Views = Numbers in this category represent the number of page views your press releases received while they were posted on EurekAlert!'s public website.

Emb. Page Views = Numbers in this category represent the number of page views your press releases received while they were under embargo. Embargoed press releases are only available to registered reporters.

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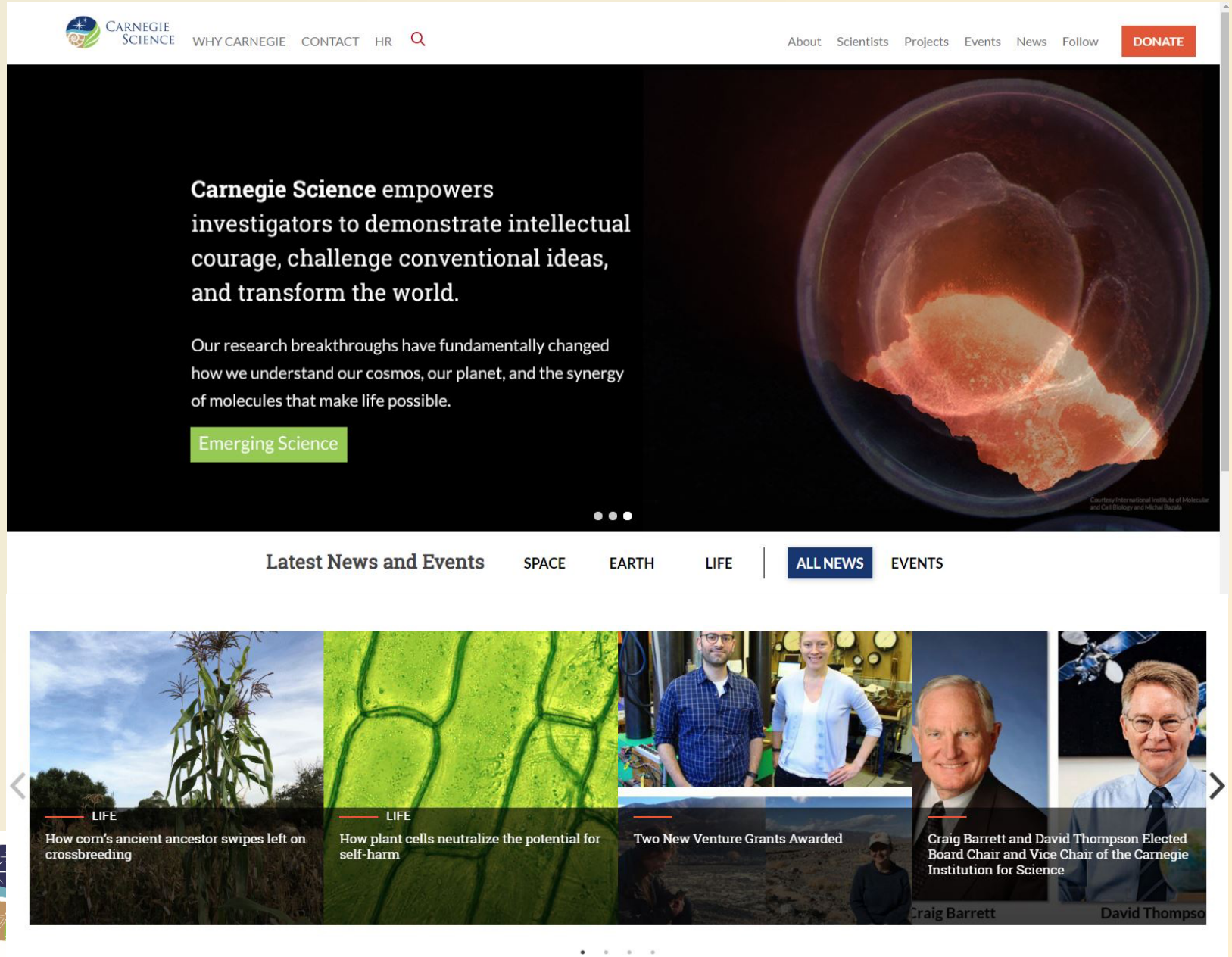
New HQ Website May 2019



Science Communication Takes Many Forms

- Personal
  - 1:1 convos
  - Outside outreach efforts
  - Social media
  - Blog, podcast, website
- Departmental/Divisional
  - Write for website
  - Web feature or Q&A by Roberto
  - Social media – (Images please!)
  - Outreach
- Institutional
  - Outreach participation
  - Press release
  - Social media – (Images please!)

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Keys to Success

- Keep your audience in mind.
- Eye-catching language and images. Metaphors to visualize difficult concepts.
- Inserting personal anecdotes can help make it a story.
- Most of the time, focusing on what was learned, not how it was learned is the best approach.
- Define science concepts or terms. Avoid acronyms and jargon.

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Social Media is a Great Place to Start

It's Where the People Are

- 72 percent of American adults use at least one social platform
  - 74 percent use Facebook daily
  - 63 percent use Instagram daily
  - 42 percent use Twitter daily

- 37 and 32 percent of people list health and science news as of interest
  - 10 percent of annual news coverage is health-related
  - 2 percent of annual news coverage is science related

OPPORTUNITY

Pew Research Center studies 2/5/2018 & 12/11/2015

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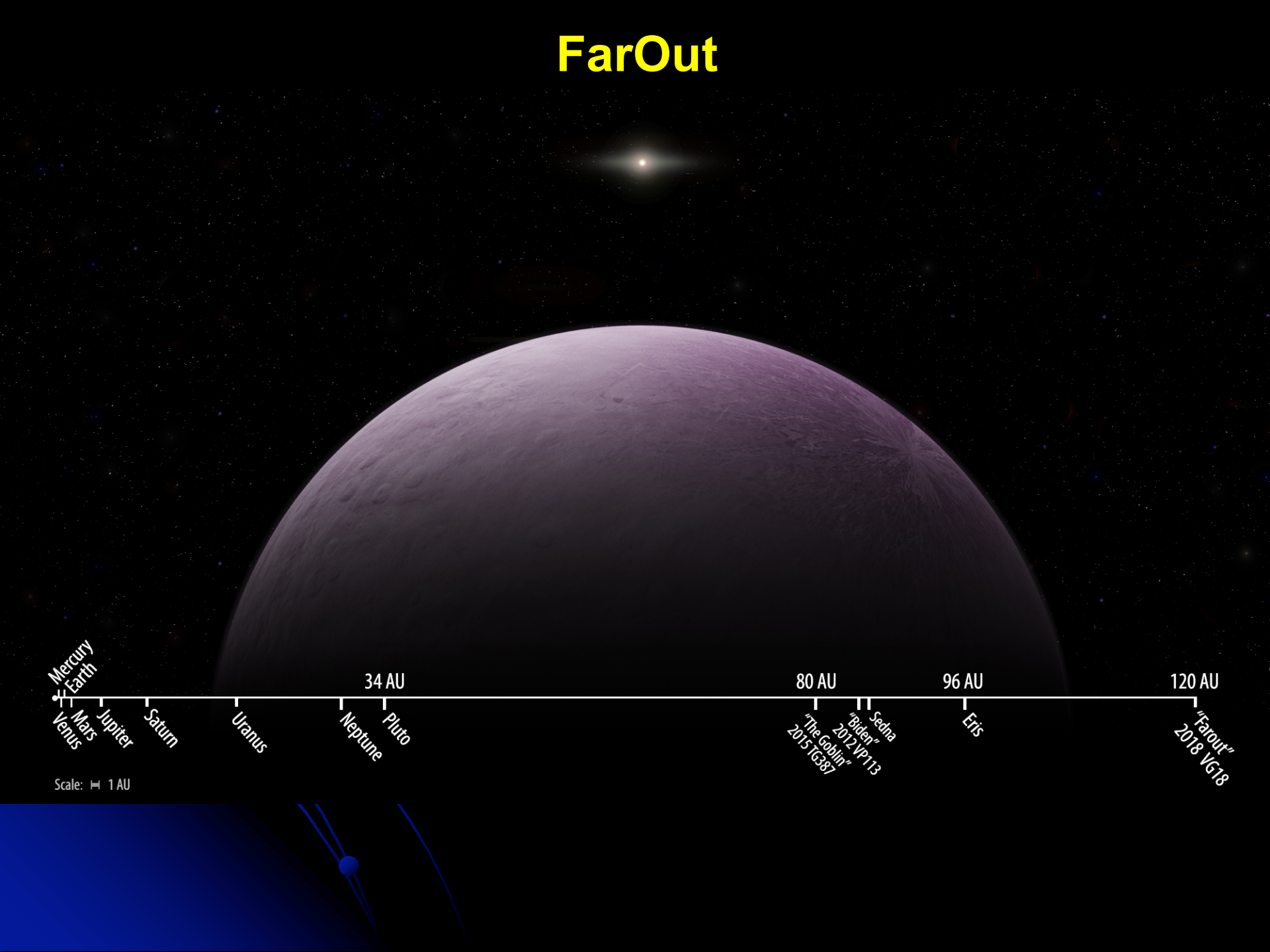
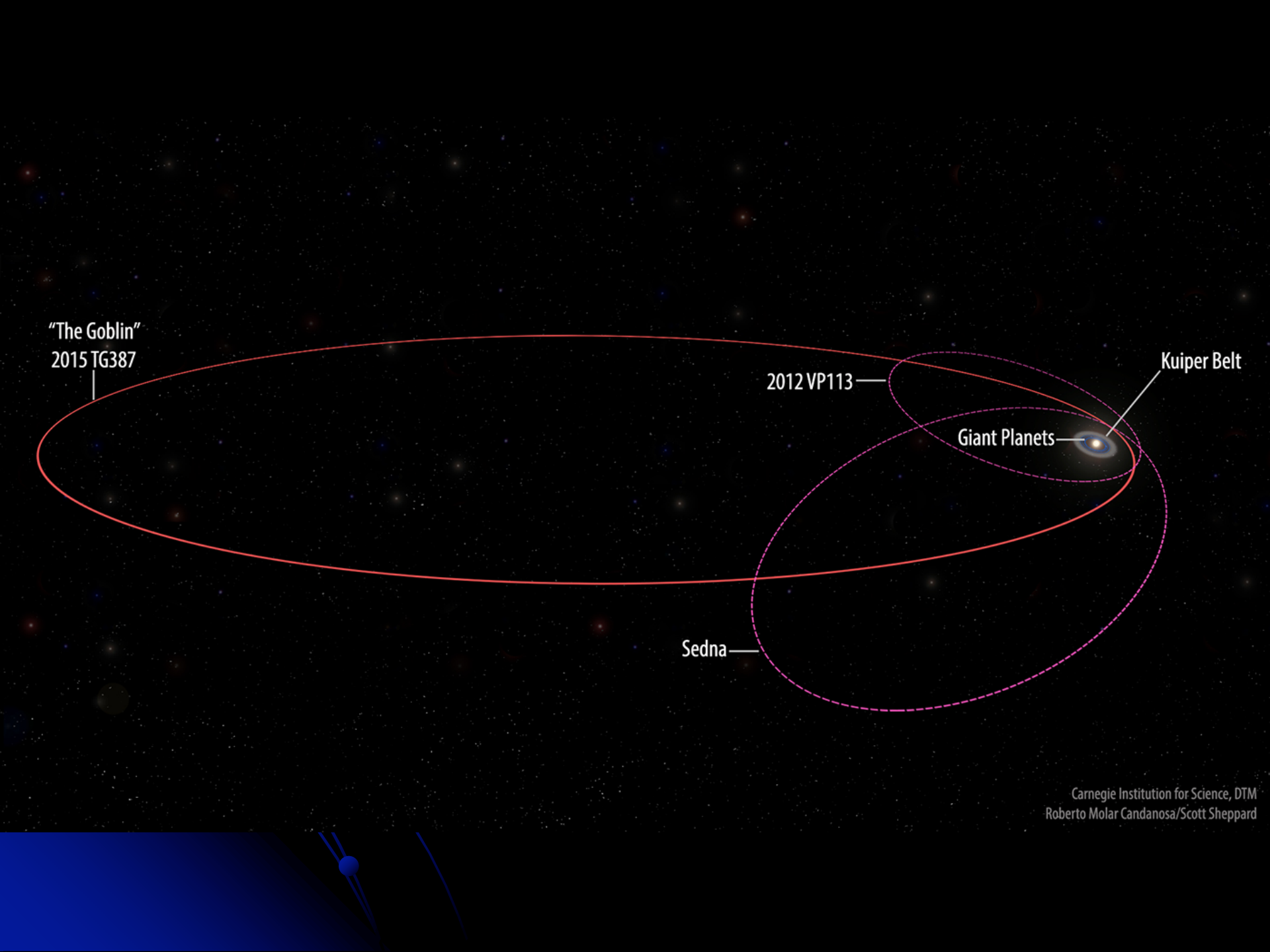
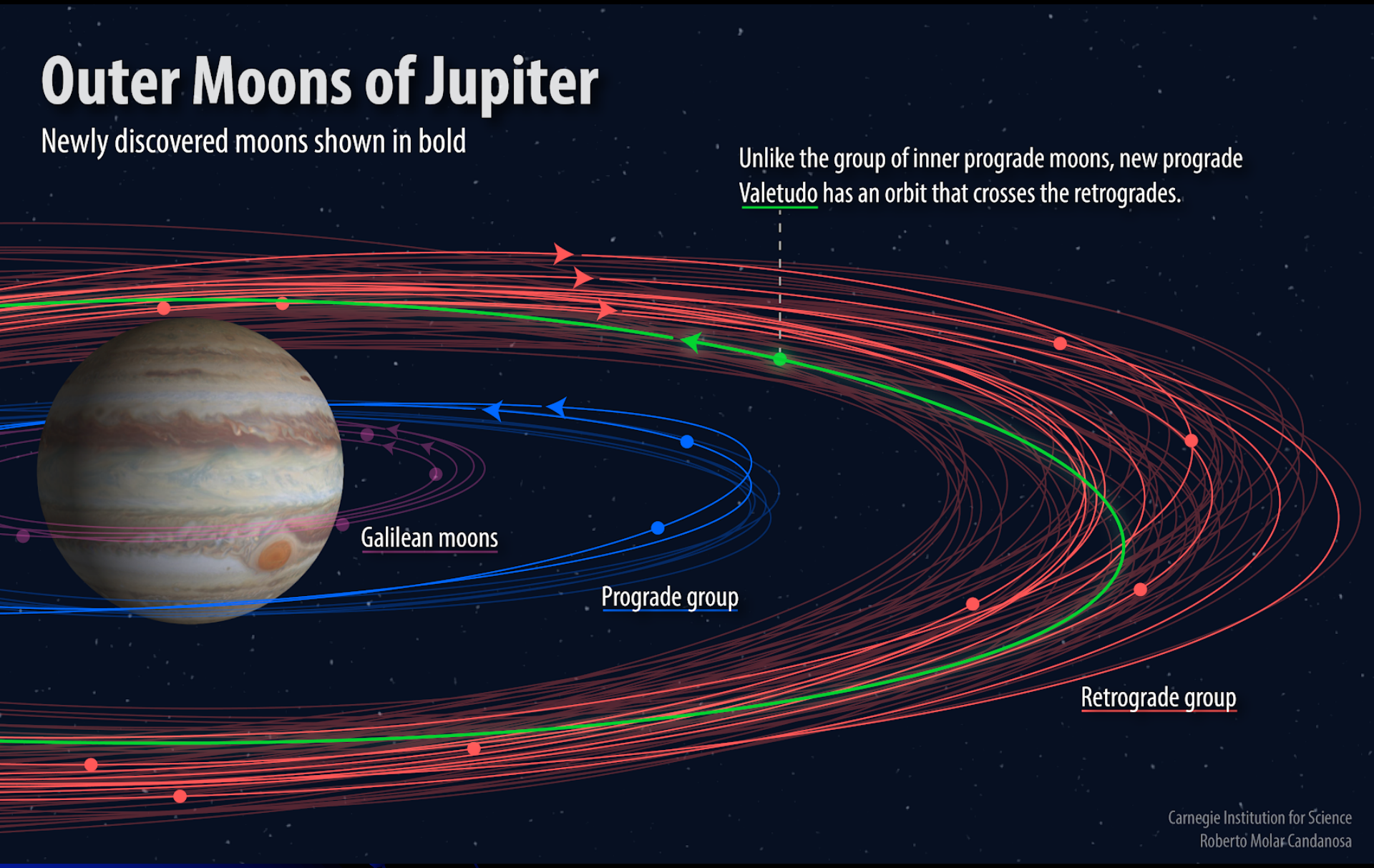
FarOut


Mercury
Earth
Venus
Mars
Jupiter
Saturn
Uranus
Neptune
Pluto
34 AU
80 AU
"The Goblin"
2015 TG387
"Biden"
2012 VP113
Sedna
96 AU
Eris
120 AU
"Farout"
2018 VG18
Scale: 1 AU


"The Goblin"
2015 TG387
2012 VP113
Kuiper Belt
Giant Planets
Sedna
Carnegie Institution for Science, DTM
Roberto Molar Candanosa/Scott Sheppard


Outer Moons of Jupiter
Newly discovered moons shown in bold
Unlike the group of inner prograde moons, new prograde Valetudo has an orbit that crosses the retrogrades.
Galilean moons
Prograde group
Retrograde group
Carnegie Institution for Science
Roberto Molar Candanosa

Discussing Other People's Science With a Reporter

-Do not go strongly negative (unless complete crack-pot science)

-Summarize the other persons work
  -if possible mention how your work is complementary or helps with the new work.

-Point out the good and the new of results from others. Why is this important.

-If you disagree, do it in a way that is not overly harsh:
  -Say Needs More Work
  Not Sure
  Is possible but more likely something else is happening

Point to your work or other work that shows this new result might not be the final word on this topic. Sometimes the new work is only incremental and not really much new, point this out in a way that highlights the main work going on in the field.

Discussing Your Work With a Reporter

Have a 1 minute summary in your head and ready to start conversation with it.

Have a good graphic that is simple and catchy.

Have a catchy title that makes one want to read more. (Gravity Dead Zones)

Have some analogies thought up about what is happening.

Reporters are mostly lazy and have a lot of time commitments:
So write your own quotes and make them informative and good.
Have all main team members quoted, so all get press coverage.

Reporters latch on to random things, is hard to control, so try to be precise.

1) They want records for most of something. (example: 2018 TG387)

2) Moon collision around Jupiter.

At end of a call, the good reporters usually ask if they have missed something or didn't ask something.

Use this to once again summarize your main results with your 1 minute summary and do bring up science you think they missed or didn't quite get a handle on or that you think you didn't get across very clearly.

A good reporter will also ask for contacts to follow-up your discussion.

Have a few people in mind and their emails and phone numbers in hand to give to the reporter. These people do not necessarily need to be the leaders of the field, but people you know are fair people and know the subject to some degree. (Sometimes the other leaders in the field are biased or direct competitors with their own agenda and so are not the best names to give out).

Beyond words

- Science comes at us in many forms
- So does science communication, including visual and multimedia
  - Videos, schematics, animations (sort of), infographics, concept art

Who cares?

- It’s what we as consumers of information are increasingly all about
- Enhances understanding
- Key for social media noise

Increased visibility of the news packages we release: Scott’s news is everywhere, including Mexico.

Science communication

- Use examples and metaphors
- Be engaging and convey YOUR EXCITEMENT
- Contextualize

Talking to journalists

- They are your friends (sort of)
- Use them
- Some might be repetitive
- Guide them
- It’s your job (sort of)

Brad Peters: *“One measure of great scientists is not losing touch with the fact that the rest of the world doesn't think about science every day. Believe me, it's really easy to do that.”*

What can these visuals look like?

- Concept art
  - https://www.nytimes.com/2018/12/17/science/farout-most-distant-solar-system.html
  - https://www.theguardian.com/science/2018/oct/02/dwarf-planet-the-goblin-discovery-planet-nine-oort-cloud
  - http://dtm.carnegiescience.edu/gallery?page=4
- Info+graphics
  - https://www.npr.org/2018/07/17/629396121/galileo-would-be-stunned-jupiter-now-has-79-moons
  - https://www.washingtonpost.com/science/2018/10/02/new-dwarf-planet-spotted-very-fringe-our-solar-system/?utm_term=.8dd4ad8bc4f1
  - https://robertomolar.com/multimedia/#jp-carousel-2099
  - https://www.businessinsider.com/farout-dwarf-planet-most-distant-object-in-solar-system-2018-12
  - Animation:https://www.washingtonpost.com/news/speaking-of-science/wp/2018/07/17/astronomers-discover-12-more-moons-of-jupiter-including-an-oddity/?utm_term=.655ff7419077
  - Animation: https://youtu.be/ToSnYiTzoJQ
- Schematic
  - https://www.nature.com/articles/s41561-019-0301-2/figures/1
  - http://dtm.carnegiescience.edu/file/subduction-zone-schematicpng

What do we need?

The product

- Attractive
- Accurate
- Informative
- Comprehensive (when possible)

The team

- Commitment (accuracy), thought, planning
- Understanding of the concept, our limitations, priorities
- Takes anything between 2-5 days

We should provide the media with our own visuals when possible.