



## Summer Schedule

Our summer schedule is in full swing with a great lineup of family-friendly shows! Beat the summer heat with our cool skies. Be sure to see them all! Our summer schedule runs through August 25<sup>th</sup>.

### Tuesdays:

2:00 – Texas Stargazing  
3:00 – Spacepark 360

### Wednesdays:

2:00 – We Are Astronomers

### Thursdays:

2:00 – One World, One Sky: Big Bird's Adventure  
3:00 – Spacepark 360

### Fridays:

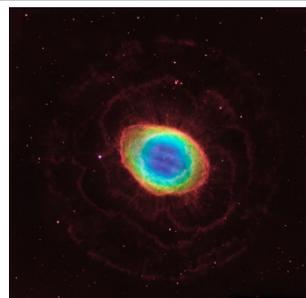
2:00 – TimeSpace

### Saturdays:

1:00 – One World, One Sky: Big Bird's Adventure  
2:30 – TimeSpace  
5:30 – We Are Astronomers  
7:00 – Pink Floyd

### Sundays:

1:30 – Secret of the Cardboard Rocket  
2:30 – Spacepark 360



## Hubble Reveals the Ring Nebula's True Shape

The Ring Nebula's distinctive shape makes it a popular illustration for astronomy books. But new observations by NASA's Hubble Space Telescope of the glowing gas shroud around an old, dying, sun-like star reveal a new twist.

"The nebula is not like a bagel, but rather, it's like a jelly doughnut, because it's filled with material in the middle," said C. Robert O'Dell of Vanderbilt University in Nashville, Tenn. He leads a research team that used Hubble and several ground-based telescopes to obtain the best view yet of the iconic nebula. The images show a more complex structure than astronomers once thought and have allowed them to construct the most precise 3-D model of the nebula.

"With Hubble's detail, we see a completely different shape than what's been thought about historically for this classic nebula," O'Dell said. "The new Hubble observations show the nebula in much clearer detail, and we see things are not as simple as we previously thought."

The Ring Nebula is about 2,000 light-years from Earth and measures roughly 1 light-year across. Located in the constellation Lyra, the nebula is a popular target for amateur astronomers.

Read more about the Ring Nebula and the latest image for Hubble [here](#).



## New ET Detection Method Leads to Quest for World's Largest Telescope

Until recently, one of the ultimate mysteries of the universe -- how many civilizations may exist on planets orbiting other stars in the Milky Way Galaxy -- relied on the possibility of detecting intelligent beings by radio signals. Now a team of astronomers, engineers, and physicists from the University of Hawaii, the University of Freiburg, and elsewhere has proposed a new and powerful technique to search for intelligent life.

The revolutionary method is described by four of the team's astronomers in the June 2013 issue of *Astronomy* magazine, the world's largest magazine on the subject.

Rather than looking for radio waves, the team suggests searching for the heat signatures of nearby planets, which requires a giant telescope that could detect infrared radiation directly from an exoplanet, thus revealing the presence of a civilization.

"The energy footprint of life and civilization appears as infrared heat radiation," says the project's lead scientist. "A convenient way to describe the strength of this signal is in terms of total stellar power that is incident on the host planet." The technique arises from the fact that a civilization produces power that adds to the heat on a planet, beyond the heat received from its host star. A large enough telescope, idealized for infrared detection, could survey planets orbiting stars within 60 light-years of the Sun to see whether or not they host civilizations.

Discover more about plans to build the 250 foot telescope, dubbed Colossus, on the [Space Watchtower blog](#).



## Life-producing phosphorus was carried to Earth by meteorites

Scientists may not know for certain whether life exists in outer space, but new research from a team of scientists led by a University of South Florida astrobiologist now shows that one key element that produced life on Earth was carried here on meteorites.

In an article published in the new edition of the *Proceedings of the National Academies of Sciences*, USF Assistant Professor of Geology Matthew Pasek and researchers revealed new findings that explain how the reactive phosphorus that was an essential component for creating the earliest life forms came to Earth.

The scientists found that during the Hadean and Archean eons – the first of the four principal eons of the Earth's earliest history – the heavy bombardment of meteorites provided reactive phosphorus that when released in water could be incorporated into prebiotic molecules. The scientists documented the phosphorus in early Archean limestone, showing it was abundant some 3.5 billion years ago.

The scientists concluded that the meteorites delivered phosphorus in minerals that are not seen on the surface of the Earth, and these minerals corroded in water to release phosphorus in a form seen only on the early Earth.

The discovery answers one of the key questions for scientists trying to unlock the processes that gave rise to early life forms: Why don't we see new life forms today?

Pasek said the research provides a plausible answer:

The conditions under which life arose on the Earth billions of years ago are no longer present today.

Read more about Pasek's research [here](#) on [EarthSky's](#) blog.



### 3D Printing Food

NASA and a Texas company are exploring the possibility of using a "3D printer" on deep space missions in a way where the "D" would stand for dining.

NASA has awarded a Small Business Innovation Research (SBIR) Phase I contract to Systems and Materials Research Consultancy of Austin, Texas to study the feasibility of using additive manufacturing, better known as 3D printing, for making food in space. Systems and Materials Research Consultancy will conduct a study for the development of a 3D printed food system for long duration space missions. Phase I SBIR proposals are very early stage concepts that may or may not mature into actual systems. This food printing technology may result in a phase II study, which still will be several years from being tested on an actual space flight.

As NASA ventures farther into space, whether redirecting an asteroid or sending astronauts to Mars, the agency will need to make improvements in life support systems, including how to feed the crew during those long deep space missions. NASA's Advanced Food Technology program is interested in developing methods that will provide food to meet safety, acceptability, variety, and nutritional stability requirements for long exploration missions, while using the least amount of spacecraft resources and



### Stellar Alignment: Rare Boost for Alien Planet-Hunting

The stars will align for planet hunters twice in the next three years, allowing them to probe the nearest star to our own solar system for Earth-size alien worlds.

Proxima Centauri, which lies just 4.24 light-years from Earth, will pass in front of background stars in both October 2014 and February 2016. Astronomers should scrutinize Proxima during these two periods, looking for subtle light shifts that could reveal the presence of close-orbiting planets, a new study reports.

"This is an opportunity to determine the mass of Proxima, and also detect planets up to 4 AU [astronomical units] around Proxima Centauri," Kailash Sahu, an astronomer with the [Space Telescope Science Institute](#) in Baltimore, Md., told reporters June 3 at the 222nd meeting of the American Astronomical Society in Indianapolis.

Proxima Centauri is a red dwarf, meaning it's cooler and smaller than our own sun.

Red dwarfs are the most common stars in the [Milky Way](#), making up about 75 percent of the galaxy's stellar population. They're good candidates to host rocky, roughly Earth-size worlds, since lower-mass

crew time. The current food system wouldn't meet the nutritional needs and five-year shelf life required for a mission to Mars or other long duration missions. Because refrigeration and freezing require significant spacecraft resources, current NASA provisions consist solely of individually prepackaged shelf stable foods, processed with technologies that degrade the micronutrients in the foods.

Find out more about this project [here](#).

stars tend to have relatively smaller planets, researchers said.

Proxima is part of the three-star Alpha Centauri system, the closest solar system to our own. A scorching-hot rocky [exoplanet](#) roughly the size of Earth was discovered circling Alpha Centauri B, another star in the system, last year.

Find out more about Proxima Centauri [here](#).