

The Wired Word

Student Handout

Sunday, **February 7, 2021** --- from 9:00-9:45am

Zoom ONLY

Meeting ID: 860 8980 7220 --- Passcode: 195152

Dear Class Member,

An enormous stream of stars in the Milky Way galaxy was recently discovered to be a family made up of almost 500 stars that were born at the same time. In another scientific development, two teenagers spotted four new exoplanets around a distant star, with similarities to planets in our own solar system. Because these discoveries raise questions about how the various parts of God's creation are related, the topic of our next class will be family.

How To Participate:

We are offering *The Wired Word* class live via Zoom. *The Wired Word* Zoom discussion will be from 9:00am-9:45am on Sunday mornings. You can also use these resources to reflect or study on your own, with your family/friends, and/or with your Abide Group.

Until further notice, there is NO in-person Sunday school due to the COVID-19 Pandemic.

You can participate in *The Wired Word* virtually by Zoom on your computer or smart device at:

<https://us02web.zoom.us/j/86089807220?pwd=eStWa0ZZK0hOTVdwU0pjZlMrdk5ydz09>

or by telephone (land line or cell phone) by calling: 1-301-715-8592

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For more information about *The Wired Word* go to: <http://www.sprucc.org/classes/sunday-classes-for-adults.html#WiredWord>

For other learning opportunities through St. Paul's UCC go to: <http://www.sprucc.org/classes.html>

To subscribe or unsubscribe for the **free** weekly mailing of *The Wired Word* student handout, please contact the church office at Office@sprucc.org.



468 Stars in the Milky Way Are a 'Family'

The Wired Word for the Week of February 7, 2021

In the News

Look up at the sky on a clear winter night, and you can see stars across the sky. Some are in clusters and others are in linear patterns called streams. All of the streams are named Theia, for the Greek titan goddess of heavenly light, and each individual stream is identified by a number, such as Theia 456. Although there are 8,292 streams of stars in our Milky Way galaxy, a new study has found that one of them appears to be a family of stars, containing nearly 500 relatives.

The European Space Agency's space telescope was recently pointed toward Theia 456, gathering data for analysis by astronomers. What the researchers discovered was that all of the 468 stars in this stream are the same age, and that this long stream of stars is moving in the same direction across the sky. According to *CNN*, the discovery was presented in January at a meeting of the American Astronomical Society.

"Most stellar clusters are formed together," said study author Jeff Andrews, a postdoctoral fellow at Northwestern University. "What's exciting about Theia 456 is that it's not a small clump of stars together. It's long and stretched out. There are relatively few streams that are nearby, young and so widely dispersed." Astronomers think that these long streams were formed when clusters of stars were ripped apart or stretched out.

"Stars exist in more structures than clumps," Andrews said. "They often form these streams across the sky. Although we've known about these for decades, we're starting to find hidden ones." Theia 456 remained hidden from astronomers for years because it is cloaked by the Milky Way's 400 billion stars, even though the stream is enormous, stretching for 570 light-years. Since one light-year is about 6 trillion miles, the size of this stellar stream is almost incomprehensible.

The stars within Theia 456 are related by the fact that they have a similar composition, containing about the same amount of iron, determined by analyzing the distinctive spectrum of light emitted by the star. Astronomers believe that all of these stars formed together about 100 million years ago. In addition, data suggests that the stars spin at similar rates, meaning that they are the same age. "If you know how the stars are moving, then you can backtrack to find where the stars came from," Andrews said. "As we rolled the clock backwards, the stars became closer and closer together. So, we think all these stars were born together and have a common origin."

In another space story, two teenagers have published a scientific paper about their discovery of four exoplanets -- planets revolving around a star other than the sun. They may be the youngest astronomers to make such a discovery to date. In late January, 16-year-old Kartik Pinglé and 18-year-old Jasmine Wright co-authored a paper in *The Astronomical Journal* describing the discovery of four new exoplanets about 200 light-years away from Earth. Their achievement is rare, since high schoolers seldom publish research

With guidance from mentor Tansu Daylan, a researcher at MIT, the students studied and analyzed data from the Transiting Exoplanet Survey Satellite (TESS). TESS orbits around the Earth and looks at bright stars with the goal of discovering new planets. "We were looking to see changes in light over time," Pinglé said. "The idea being that if the planet transits the star, or passes in front of it, it would [periodically] cover up the star and decrease its brightness." To the team's surprise, they discovered four planets orbiting around the star.

These exoplanets appear to have similarities to planets in our own solar system. Three of the planets are "sub-Neptunes," gaseous planets that are similar to our own Neptune, but smaller. The fourth planet is a "super-Earth," rocky like Earth but larger in size. "Our species has long been contemplating planets beyond our solar system and with multi-planetary systems, you're kind of hitting the jackpot," Daylan said. "We would like to understand the fundamental processes of planet formation and evolution using this planetary system."

Daylan added that it was a "win-win" to work with teenagers Pinglé and Wright on the study. "As a researcher, I really enjoy interacting with young brains that are open to experimentation and learning and have minimal bias," he said. "I also think it is very beneficial to high school students, since they get exposure to cutting-edge research and this prepares them quickly for a research career."

More on this story can be found at these links:

[A Stream of Nearly 500 Stars in the Milky Way Is Actually a Family. CNN](#)

[Four Exoplanets -- Including a Super-Earth Planet -- Discovered by High School Students. SciTechDaily](#)

Applying the News Story

The discoveries of a family of stars and four exoplanets can challenge us to think about how the various parts of God's creation are related, and how our human families fit into God's design.

The Big Questions

1. Four hundred billion stars in the Milky Way galaxy. A family of stars apparently formed 100 million years ago. Four planets circling a star 200 light-years from Earth. What feelings and thoughts arise within you as you ponder the enormity of God and creation?

2. The stars within Theia 456 are related because they have a similar composition and were formed at the same time. How does this make them a family? What other factors can form a family, in the worlds of science and human relationships? How is a church community a family?

3. Theia 456 was hidden for many years before it was recognized as a family of stars. What types of human families were hidden for much of history? How were they finally recognized?
4. "As a researcher," said mentor Tansu Daylan, "I really enjoy interacting with young brains that are open to experimentation and learning and have minimal bias." How has this been true for you, if at all? What can the younger members of our families teach us?
5. A great deal of astronomy involves the study of light from distant stars, and how the light changes over time or is blocked by planets. Where do you see the brightest light in your nuclear family? In your church family? What can be done to keep this light from being blocked or dimmed?

Confronting the News With Scripture and Hope

Here are some Bible verses to guide your discussion:

Ruth 2:1-2

Now Naomi had a kinsman on her husband's side, a prominent rich man, of the family of Elimelech, whose name was Boaz. And Ruth the Moabite said to Naomi, "Let me go to the field and glean among the ears of grain, behind someone in whose sight I may find favor." She said to her, "Go, my daughter." (For context, read 2:1-13.)

In a time of famine in Judah, a man of Bethlehem named Elimelech went to the land of Moab, along with his wife Naomi and two sons. The man died and his two sons married a couple of Moabite women named Orpah and Ruth. But then the two sons died, leaving Naomi without a husband or sons. Naomi decided to return to Judah, but she knew that she had nothing to offer her daughters-in-law, so she said, "Go back each of you to your mother's house" (1:8).

All three wept, and the daughter-in-law named Orpah departed, but Ruth clung to her mother-in-law. Naomi said to her, "See, your sister-in-law has gone back to her people and to her gods; return after your sister-in-law." But Ruth said, "Where you go, I will go; where you lodge, I will lodge; your people shall be my people, and your God my God. Where you die, I will die -- there will I be buried!" (1:15-17).

Ruth went to Bethlehem with Naomi, met a man named Boaz, married him and had a son who became the grandfather of David. Because Ruth remained faithful, she was able to become the ancestor of the greatest of Israel's kings.

Questions: What does the story of Naomi, Ruth and Boaz teach you about family life? How can cultural differences be overcome in the creation of a family? Where have you seen this challenge in your own life?

Psalm 19:1

The heavens are telling the glory of God; and the firmament proclaims his handiwork. (No context needed.)

In the ancient world, the sky was understood to be a solid firmament (or dome) stretching from horizon to horizon. The stars were placed as lights in the firmament. When the dome would open, rain would fall through the "windows of the heavens" (Genesis 7:11). In fact, we still say that "the heavens opened" when it starts to rain heavily. In the Hebrew scriptures, every part of God's creation was understood to be good, and to reveal God's glory.

Questions: How do the heavens reveal the glory of God to you? Where do you see evidence of a divine Creator in the handiwork of the universe? What makes you feel most connected to God in creation?

Mark 3:31-35

Then [Jesus'] mother and his brothers came; and standing outside, they sent to him and called him. A crowd was sitting around him; and they said to him, "Your mother and your brothers and sisters are outside, asking for

you." And he replied, "Who are my mother and my brothers?" And looking at those who sat around him, he said, "Here are my mother and my brothers! Whoever does the will of God is my brother and sister and mother." (No context needed.)

Although Jesus honored the bond between marriage partners and welcomed little children, he did not put a focus on the nuclear family to the exclusion of all else. In fact, he called his first disciples to leave their families and follow him. Jesus saw members of his family as all those who did "the will of God."

Questions: What does it mean to you to be a member of the family of Jesus? How do you attempt to do the will of God in your home, workplace, school or community? What are the challenges of defining family in this way?

Romans 8:28-29

We know that all things work together for good for those who love God, who are called according to his purpose. For those whom he foreknew he also predestined to be conformed to the image of his Son, in order that he might be the firstborn within a large family. (For context, read 8:18-30.)

The apostle Paul assured the followers of Christ in Rome that "the sufferings of this present time are not worth comparing with the glory about to be revealed to us" (v. 18). He told them that "the creation waits with eager longing for the revealing of the children of God" (v. 19). Creation was actually groaning like a woman in labor, and people were groaning as well, as God's new creation came into existence. Until then, Paul promised that the Spirit would help them in their weakness, and that the Spirit would intercede "with sighs too deep for words" (v. 26). At the end of this birth process, the followers of Christ would be conformed to Christ, "in order that he might be the firstborn within a large family."

Questions: How do you understand yourself to be part of the family of Christ? What comfort do you gain from this in a time of suffering and stress? In what ways are you still challenged to be conformed to Christ?

For Further Discussion

1. Jesus said, "Let the little children come to me, and do not stop them; for it is to such as these that the kingdom of heaven belongs" (Matthew 19:14). The words of Jesus, combined with the story of the teenagers discovering four exoplanets, challenges us to lift up young people. How can we better encourage youths and not disdain them, in the worlds of faith and science? What can we do to be a church that truly welcomes children?
2. Studies of exoplanets are revealing that these heavenly bodies have much in common with the planets in our solar system. What does this suggest to you about the possibility of life elsewhere in the universe? How might we be family with residents of other solar systems? What does this say to you about our Creator God?
3. What characteristics of family exist in the Christian community? How can good qualities be enhanced and bad characteristics be minimized? How is your church community a family to you, if at all?
4. "When I look at your heavens," says the writer of Psalm 8 to God, "the work of your fingers, the moon and the stars that you have established; what are human beings that you are mindful of them, mortals that you care for them?" (vv. 3-4). The question is a good one: What are human beings that God is mindful of them, mortals that God cares for them? Discuss.
5. In a sermon called "Water is Thicker than Blood," TWW team member Bill Tammeus made the point that the water of baptism creates a more enduring, eternal family than that created by blood relationships. How has this been true for you, if at all?

Responding to the News

Use the discovery of star families and exoplanets as a springboard for your own reflection on the qualities of family that are important to you. Make an effort this week to strengthen your own connections with people in your nuclear family, church community or neighborhood.

Prayer

We thank you, Creator God, for the bonds of family that exist throughout your universe, from distant stars to planet Earth. Help us deepen our connections and do your will. In Jesus' name. Amen.

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