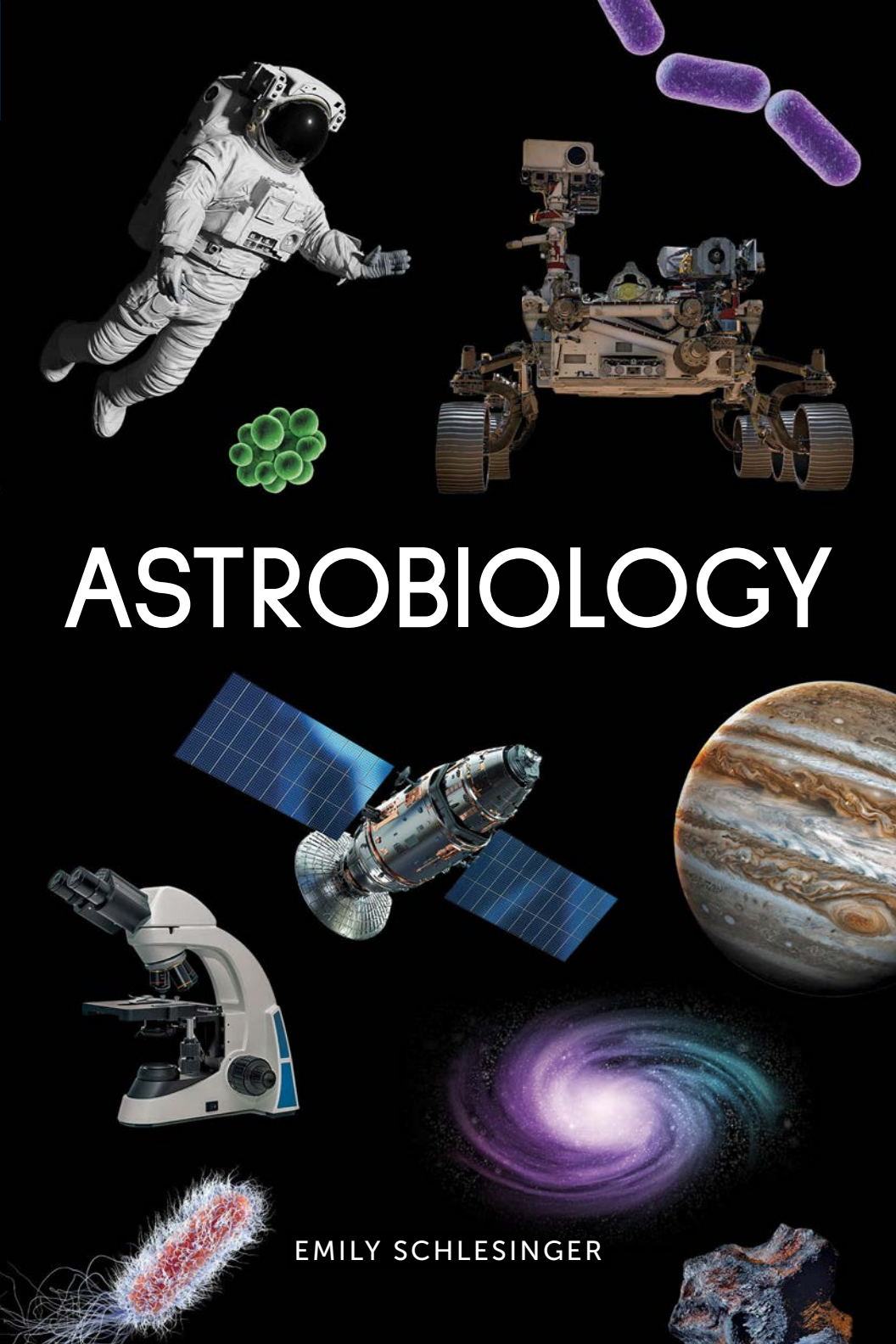

ASTROBIOLOGY

EMILY SCHLESINGER

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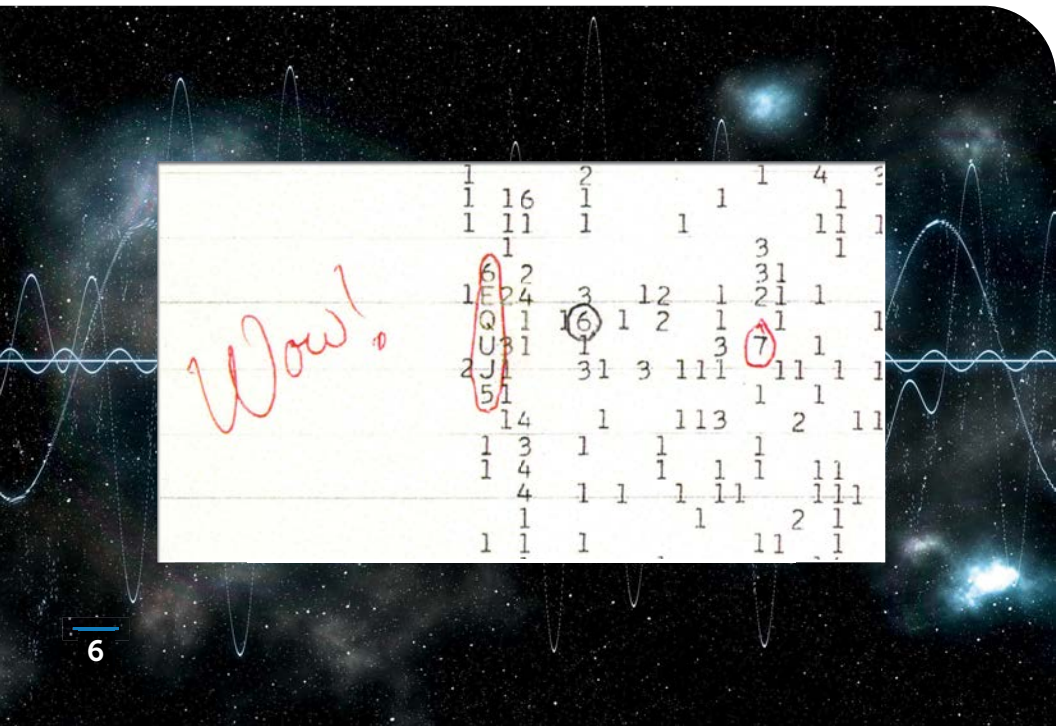
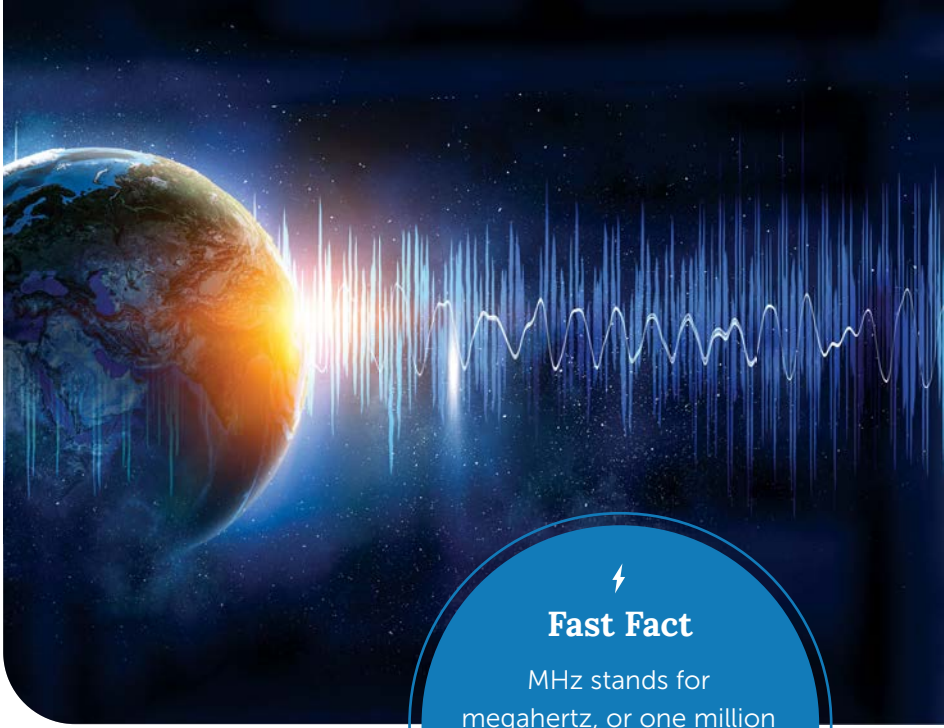
THE WOW! SIGNAL

It was 1977. A radio telescope was scanning the skies. It was searching for alien life. An antenna listened. It hoped to find **radio waves**. These could bring a message from another world. But there was nothing so far. It was quiet out there.

The telescope was in the middle of Ohio. It sat in an observatory called Big Ear. Scientists worked there. Some were volunteers. They read printouts each day. These showed the signals that had come in. Each signal was given a number. Most were 1s and 2s. That meant the signals weren't very strong. They were just background noise.

One day, an employee came into work. He looked at the signal printouts. The telescope was pointed south. Then the man looked closer. Something was different. Numbers and letters stood out. He saw "6EQUJ5." This was a clear signal. It had lasted 72 seconds. The man circled it. Next to it he wrote, "Wow!"





Fast Fact

MHz stands for megahertz, or one million hertz. Hertz is a unit of frequency used to measure sound waves.

Scientists met. They puzzled over the signal. It was very strong. The letters showed that. In fact, the signal came in at 1420 MHz. This is a **frequency**. It is usually quiet. That is why it is a good channel for communication. Scientists had long thought that aliens might use it.

The telescope was put into action. It pointed back at the same area. Then it listened. But the signal did not repeat. It was never heard again. People kept trying. They spent almost 20 years. Finally, Big Ear was shut down.

The Wow! signal became famous. Many tried to find the source. Years went by. Some came close. It was 2017. Scientists saw a pair of **comets**. The comets gave out a signal. This was at 1420 MHz. Could it be the same as the Wow! signal? That was possible. Later, people were not sure. They had questions. Was the signal strong? No, this one was not as strong as the signal in 1977. Was the telescope pointed in the same direction? No, it was not pointed south.

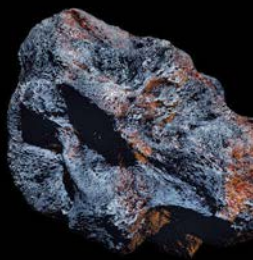
The mystery is still unsolved. It is not the only one. New radio signals come in every year. They are studied. People look for clues. Are the signals from another world? The search for answers has grown. A new branch of science focuses on this. It is called **astrobiology**. This is the study of life around the universe.

So far, **extraterrestrial** life has never been found. But it could exist. Astrobiologists are hunting for evidence. They use many tools. Telescopes search outer space. There are missions to Mars. Robots will visit Jupiter's moons. Maybe we are alone. But maybe we are not. Alien life could be out there. If so, astrobiologists want to know.

SCIENCE

ASTROBIOLOGY

People have asked the same question for centuries: are humans alone in the universe? Astrobiologists seek to find the answer. From studying tiny organisms under a microscope to sending remote detection devices to outer space, many hope to find and communicate with life beyond the boundaries of Earth.



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MARCHING BAND






EMILY SCHLESINGER

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OHIO STADIUM
BUCKEYES
OHIO STATE
ST POINT

HALFTIME!

It is a crisp October day in Columbus, Ohio. Football is the game. Ohio State University (OSU) plays Penn State. The game flies by. OSU leads. The score is 42 to 7. A whistle sounds for halftime. Players run off the field.

Fans stand up to stretch. Some go to get drinks. Others buy food. Then the loudspeaker crackles. A voice shouts. “Grab a box of popcorn! We’re going to the movies!”

A big red *O* marks the middle of OSU's field. Someone runs into the *O*. He waves a **baton** in the air. Band members fill the field. They form marching lines. Instruments roar to life.

All heads turn to look. The marching lines start changing. They form a shape. Is it a bird? Is it a plane? No. It is a man. He wears a cape. Instruments make up his body. Each leg is a set of trombones. Drums form his head. Flutes make his cape. The body starts to move. A song plays. It is from *Superman*.

Across the field is a skyscraper. It is made of tubas. The building is falling. Superman dashes toward it. His cape lifts him. He flies across the field. With a single bound, he rescues the falling building. The crowd cheers.

Then the scene shifts. Shapes change. Bodies move. They form a volcano. It is Mount Doom. Music from *The Lord of the Rings* plays. Figures shift again. The shape turns into a broom. Someone flies across the field. It is a quidditch player. He catches a golden bird. The song is from *Harry Potter*.

Fast Fact

A typical marching band field performance lasts five to ten minutes. At OSU, band members practice music and movements for up to 30 hours per week during football season.

Next, the broom grows hind legs. It sprouts a tail. A T. rex roars. The tune changes again. It is from *Jurassic Park*. Finally, two ships form. They raise flags. Cannons fire. One ship blasts the other. Smoke fills the air. The theme is *Pirates of the Caribbean*.

All eyes are on the field now. Ears are tuned in. The crowd is dazzled. But few stop to look closer. Each dot on the field is a musician. Learning each instrument takes years of work. Months of practice go into every move. The result is a work of art. It is a show of strength. Behind it is the hidden world of the **marching band**. But many don't know the whole story.

Fast Fact

ESPN analysts measured the heart rates of marching band performers. They found them to be the same as athletes running an 800-meter dash.

SPORTS

MARCHING BAND

In just minutes, Superman saves a falling skyscraper, a volcano erupts, and a T. rex struts across a football field. It seems almost anything is possible during a marching band performance. Players and band directors spend hours preparing for these energetic shows. Every move is refined, and each note is pitch perfect. All the hard work comes together for an iconic performance.

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