Carolyn Brinkworth – scientist – FAQs

Is there intelligent life out there?
There is absolutely no scientific evidence to suggest that intelligent life exists on another planet. However, this does not mean that life could not exist. There are many millions of stars in our galaxy alone, and many millions of galaxies in the universe. The growing number of extra-solar planets (now about 60) tells us that planets around stars are common, which would give extraterrestrial life a place to develop. The drawback is that the chances of intelligent life existing at the same time as us are pretty small. Humans have only been around for a few million years and have only developed technology to communicate with in the last couple of hundred years. This is a tiny amount of time in a Universe thought to be about 15 billion years old.

Even if intelligent life does exist out there now, the real problem is communication. Our oldest radio signals have been travelling out into space for the last 100 years, and have only reached a tiny number of stars in our galaxy. It is therefore very unlikely that any intelligent aliens could hear us, even if they were listening, and the same problems will occur with any signals sent to us by them. There is an even bigger problem with travelling between the stars – the Voyager spacecraft hasn't even reached the edge of the Solar System yet, even though it was launched over 20 years ago. It will take it another 40,000 years to reach the nearest star.

Is there life on Mars?
Mars is one of the most likely places to find life in the Solar System, but so far there is no proof that it exists. Any life that does exist Mars will be hard to find. It won't be walking around on the surface like we do on Earth, but will be very small and will probably live inside the rocks or under the surface. One reason for this is that there is very little water on Mars and it is very cold, so any life must be small and need almost no water to survive. A European Space Agency mission called Beagle 2 is due to be launched in June 2003 to look for life on Mars. It will use an extendable "mole" to burrow under the surface and bring up samples of Martian soil to study in its onboard laboratory. Finding life on Mars would be extremely important because it would mean that life can start on other planets, not just on Earth. If life starts quite easily on planets in our own Solar System, then this makes life on planets around other stars much more likely.

There was a lot of excitement a few years ago when meteorite experts found a meteorite called ALH84001, which had landed in the Antarctic. Scientists proved that the rock had come from Mars because it was made of the same stuff as the planet, and inside there was a tiny structure that looked very like a fossilised bacterium. Some scientists claimed that this was evidence of life, while others said that it was too small to have been alive and that it was just an unusual looking part of the rock. The argument has continued, but will hopefully be settled by the results from Beagle 2.

Where else might we find life in the Solar System?
Mars is the most likely place to find life in the Solar System. Looking at it today, it seems unlikely, as there is very little water, an incredibly thin carbon dioxide atmosphere and it is very cold.

However, some of the features on Mars look very like features made by rivers and floods on Earth, suggesting that water used to flow on the surface. Scientists now believe that Mars used to be much wetter and warmer than it is today, which would make it ideal for life. If life did exist on Mars then it is possible that evidence of it still remains, trapped in the rocks or underground.

Another place that looks like it might support life is Europa, one of the moons of Jupiter. Europa is covered in a thick layer of ice, but cracks in the surface suggest that there may be a liquid ocean underneath. This is kept warm enough to stop it freezing solid by the tidal forces from Jupiter. As Europa orbits the planet, the gravitational pull of Jupiter stretches and squeezes the moon, warming the inside up, just like a rubber band warms up if you stretch it quickly over and over again. There would be no light under the thick icy crust, but life does exist in similar dark and very cold conditions in the deep oceans on Earth, which suggests that it would be possible for life to exist on Europa too.

The third place that scientists are interested in exploring is Titan, one of Saturn's moons. Titan is shrouded in a very thick atmosphere, which could keep in enough heat to make the moon capable of supporting life. No one knows what the surface of Titan is like, but a spacecraft called Cassini-Huygens will arrive there in 2004, and the Huygens probe will be dropped down onto the moon to study its atmosphere.

Is anyone looking for alien life?

There are many different groups looking for many different types of alien life. The space agencies NASA and ESA (European Space Agency) have both sent, or are sending, missions to Mars to look for life, and NASA currently have a mission on the way to Titan and are planning another to go to Europa. However, these missions are looking for any signs of life at all, not intelligent life. The most they are likely to find are small bacteria. There are, however, a number of organisations looking for intelligent life in the Universe. The biggest of these is SETI, the Search for Extra-Terrestrial Intelligence. SETI mainly look for radio signals from alien civilisations. They have the use of radio telescopes in Australia and West Virginia, as well as time on the huge Arecibo telescope in Puerto Rico, backed up by Jodrell Bank Observatory near Manchester, UK.

What will happen if SETI do detect a signal from aliens?

Six international space organisations have put together a Declaration of Principles Concerning Activities Following the Detection of Extraterrestrial Intelligence. This says that any signals from extra-terrestrial life belong to the entire human race, and that any signals will be released to as many people as possible as quickly as possible. This means that individual governments would not be able to keep quiet about any alien contact. In reality, there would be a short time before scientists announced contact to let them check with other observatories across the globe and to make sure that the signal was real. Once the signal had been confirmed, the press would be told the news, which would then be spread worldwide.

Want to ask a different question?
Go to www.scienceyear.com/chalkface/index.html for Carolyn's email address.