



The Great Cosmic Bake-off

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Cooking up a Universe is fairly similar to baking at home; you add ingredients (let's say eggs, flour and milk) put them in the right conditions (a hot frying pan) and you end up with something new and infinitely better (pancakes!).

The Universe cooks things up in a similar way. Molecules are the ingredients that make up life, planets and many of the things we see around us, but molecules themselves need to be created first.

Molecules are made up of simple particles called atoms. For example, water is a molecule created from two hydrogen atoms and one oxygen atom. But molecules don't sprout up everywhere, like most recipes the temperature needs to be just right.

In regions of space close to stars, where the temperature is too high, certain molecules cannot form. At large distances from stars, where temperatures are too low, these molecules can't form either. That's because some of the necessary ingredients start to freeze out.

To help us better understand where to find different molecules in space, astronomers have been looking at a young star surrounded by a thick ring of gas and cosmic dust that might one day form into planets.

Picking through the ring around that star – where the temperature is just right – they found gas containing delicate molecules. No surprise there. The big surprise was that they then found more gas made of those molecules in a second ring, much further away from the star's heat. You can see the two rings in this awesome new picture.

At first sight, this result doesn't seem to be too impressive. But to astronomers, it's very important. It tells them that molecules can be made in places you wouldn't expect. Eventually, this may shed light on molecules in our own Solar System, which formed from a disc quite similar to the one surrounding the young star.

▲ **COOL FACT!**

Molecules are interstellar messengers that tell us how and where different types of molecules form. The molecules found on Earth tell us most of our water is even older than the Sun!