

Ingredients of Life found in distant galaxy, Arecibo astronomers announce.

Astronomers from Arecibo Observatory announced today at an American Astronomical Society meeting in Austin, TX, that they had found two of the basic ingredients of life in the distant galaxy Arp 220.

The team used the 305-m Arecibo Radio Telescope, the world's largest and most sensitive, to observe the galaxy at a number of different frequencies. "We weren't targeting any particular molecule so we didn't know what we were going to find – we just started searching, and what we found was incredibly exciting!" said Tapasi Ghosh, one of the astronomers who made the discovery.

Arp 220, at a distance of 250 million light years from Earth, was chosen because it is known to be forming new stars at a very high rate. "We know from our own Galaxy that massive star formation is linked to the formation of many different kinds of molecule, so we knew this was a good place to look," explained team member Chris Salter.

Among the molecules revealed by the survey, were Methanimine and Hydrogen Cyanide. Team member Robert Minchin explained, "These are two of the basic ingredients of life – they can combine with water to form Glycine, the simplest Amino Acid, and Amino Acids are the building blocks of life."

These molecules were found by searching for radio emission coming at specific frequencies. "Each chemical substance has its own unique radio frequencies," explained Mikael Lerner, "and we can identify different substances just like you can identify different people based on their unique finger prints."

"The fact that we can observe these substances at such a vast distance means that there are huge amounts of them in Arp 220," said Emmanuel Momjian. "It is indeed very intriguing to find that the ingredients of life appear in large quantities where new stars and planets are born."

The Arecibo astronomers who made this discovery are Chris Salter, Tapasi Ghosh, Barbara Catinella, Mayra Lebron, Mikael Lerner, Robert Minchin and Emmanuel Momjian.

Image caption: The methanimine detection spectrum superimposed on the Arecibo telescope. (J. Acevedo/R. Minchin/NAIC)