NATIONAL CATHOLIC REPORTER
Published on *National Catholic Reporter* (https://www.ncronline.org)

Baptizing Martians, alien DNA and the implications of genetic manufacturing

Megan Fincher | May. 27, 2014 Eco Catholic

Unless you live in outer space, you?ve probably heard the jokes about Pope Francis? ?alien homily [1]? on May 12.

?If -- for example -- tomorrow an expedition of Martians came, and some of them came to us here ... Martians, right? Green, with that long nose and big ears, just like children paint them ? And one says, 'But I want to be baptized!' What would happen?" he asked as part of a homily dedicated to the first pagan conversions to Christianity and the Holy Spirit?s often unpredictability in calling people to Christ.

Francis got it wrong, however, when he spoke of ?an expedition of Martians? coming to Earth; a few days before his homily, news reports detailed [2] had already arrived of the creation of alien life at the Scripps Research Institute in La Jolla, Calif.

In a feat previously thought impossible, a team of scientists not only created two new DNA base pairs (the building blocks of the DNA double helix), but also managed to successfully implant this altered DNA into a living organism. In other words, an organism with alien DNA now exists on Earth.

Led by Floyd Romesberg, a biological chemist at Scripps, the team?s findings [3] were published May 7 in the peer-reviewed journal *Nature*. Romesberg began working on the project in the late 1990s.

?Life on Earth in all its diversity is encoded by only two pairs of DNA bases, A-T and C-G, and what we?ve made is an organism that stably contains those two plus a third, unnatural pair of bases,? Romesberg explained [4] in a Scripps press release.

How is this possible? What does it even mean?

Every living thing on our planet, from a microscopic single-celled organism to a towering giraffe, is comprised of cells, aptly referred to as ?the building blocks of life.?

Nearly every cell contains DNA, a two-strand molecule that looks like a twisted ladder, usually referred to as a double helix. DNA?s twisted ladder has ?rungs? comprised of four molecules: adenine (abbreviated as A), thymine (T), guanine (G) and cytosine (C). These molecules are called base pairs, and like inseparable lovers, adenine will only pair with thymine, and guanine only pairs with cytosine.

DNA gives off ?genetic instructions? that are encoded in the base pairings. For example, the DNA sequence for brown eyes is AAAAGCGCCCGGG, and for blue eyes, AAATGCGCCCGC. As well, the 20 amino acids that create life-sustaining protein are built via these different base pair combinations.

Base pairs fit together so perfectly that they smoothly ?unzip? and then ?re-zip? when DNA replicates itself. The challenge, then, was to search for molecules that could ?hook up across a double-strand of DNA almost as

snugly as natural base pairs,? according to the scientific team.

After decades of work, the Scripps scientists discovered two molecules -- d5SICS and dNaM -- that are lovers, as well; they fit together like A-T and G-C do. The scientists named these new base pairs X and Y, but they didn?t know if DNA could be tricked into thinking that X and Y were rungs that belonged on its ladder.

The team synthesized DNA that contained not only the natural A-T and G-C base pairs, but also the unnatural X-Y base pairs. When they inserted this synthetic DNA into the bacterium E. coli, its cells did not reject the alien DNA, but rather began replicating it. At that moment, it became the first living organism containing a DNA sequence not found anywhere else on Earth.

Many people question the ethics of creating new life forms, and in this particular case, others have begun to ruminate on the possibility of synthetic DNA set loose into the wild and wreaking havoc.

The Scripps team believes that the new DNA strands containing X-Y have the possibility of creating up to 172 amino acids, offering vast possibilities, particularly in the medical field.

Romesberg said the discovery ?takes us closer to an expanded-DNA biology that will have many exciting applications -- from new medicines to new kinds of nanotechnology.?

Denis A. Malyshev, a member of Romesburg?s team, also said that the synthetic DNA should not cause anxiety, explaining that if scientists don?t provide new bases, ?the cell will revert back to A, T, G, C, and the d5SICS and dNaM will disappear from the genome.?

For example, if scientists used this new DNA strand for vaccines, the X -Y pair bonds alien to our body would naturally break down.

The team believes, in other words, that this breakthrough will help -- and not harm -- humankind.

When Francis made his Martian comment, he echoed one of Pope Benedict XVI?s astronomers Br. Guy Consolmagno, who said in 2010 [5] that he would baptize an alien ?only if they asked.?

?Any entity -- no matter how many tentacles it has -- has a soul,? Consolmagno explained.

I would like to ask Consolmagno and Francis what they think of alien DNA: Does it still contain that primordial spark? And if they answer, *No, it does not*, what will happen when synthetic DNA grows new limbs or cures cancer or reverses the aging process? Will we lose a little bit of our souls, carrying around such soulless DNA?

Ultimately, it is for the Alpha and the Omega to decide if he will accept the X and Y into his fold.

Links:
[1] http://en.radiovaticana.va/news/2014/05/13/pope_at_mass_holy_spirit_makes_the_unthinkable_possible/1100401
[2] http://www.nytimes.com/2014/05/08/business/researchers-report-breakthrough-in-creating-artificial-genetic-code.html?_r=0

[3] http://www.nature.com/nature/journal/v509/n7500/full/nature13314.html
[4] http://www.scripps.edu/news/press/2014/20140507romesberg.html
[5] http://www.catholicherald.co.uk/news/2010/09/30/%E2%80%98i%E2%80%99d-baptise-an-alien-%E2%80%93-but-only-if-it-asked%E2%80%99-says-pope%E2%80%99s-astronomer/