

# Chromosomal makeup of a donkey-zebra hybrid analysed by scientists

The chromosomal makeup of a donkey-zebra hybrid has been pieced together by researchers, using a successful new strategy to characterize each chromosome.

The hybrid male was the offspring of an unintended mating between a donkey mare and a zebra stallion at an Italian rescue centre near Florence in July 2013.

The hybrid appeared healthy and was raised by his mother.

Researchers Alessandra Iannuzzi, Jorge Pereira, Clara Iannuzzi, Beiyuan Fu and Malcolm Ferguson-Smith set out to look for evidence of chromosomal rearrangements in its genetic makeup through blood analysis.

Each species has a characteristic diploid number of paired chromosomes. A donkey typically has 62 chromosomes, inheriting 31 from each parent, and a zebra has 44, with 22 coming from each parent.

The hybrid was found to have 53 chromosomes in which a haploid set of 22 chromosomes came from the zebra and 31 came from the donkey.

Haploid is the term used when a cell has half the usual number of chromosomes (one member of each pair), in this case in eggs or sperm produced in the ovaries or testicles through the process of meiosis for the purposes of sexual reproduction.

In the case of such hybrids, the genetic makeup of each parent is highly conserved so that the half from each animal contains virtually the same gene/DNA content, although they will be packaged in a different number of chromosomes – in this case,

53.

The study team described the technique they used involving chromosome-specific painting probes, a pooling strategy and sequential multicolour fluorescence in situ hybridization.

They say their new strategy may have several useful applications in determining the chromosomal makeup of other complex hybrids and other chromosomal aberrations.

“We can conclude confidently from the unambiguous identification of all chromosomes that the zebroid has received a precise haploid set of chromosomes from each parent without rearrangement,” they reported in the open-access peer-reviewed journal, *PLOS ONE*.

They said the results would indicate that the zebroid was sterile due to its very complex chromosomal organization.

“For this reason, we are planning to study sperm chromosome segregation upon reaching sexual maturity.”

<https://www.horsetalk.co.nz/2017/07/22/chromosomal-makeup-donkey-zebra-hybrid/>