

Some recent cases of putative homoploid (and allopolyploid) hybrid speciation that seemed to me particularly noteworthy. Not a systematic review. These all became known to me since my own review of hybrid speciation in Nature.

Thanks in part to a twitter thread and suggestions from my friends. Including amendments after my initial post due to Nick Bailey.

J. Mallet, August, 2021

Peter and Rosemary Grant observed a hybrid speciation that started with a single pair of Darwin's finches, and led to apparently complete reproductive isolation for a number of generations. It's been detailed several times, but here's the genomic data with the now corrected understanding of the origin of one of the parents:

Lamichhaney, S., Han, F., Webster, M.T., Andersson, L., Grant, B.R., & Grant, P.R. 2018. Rapid hybrid speciation in Darwin's finches. *Science* 359:224-228.

<https://doi.org/10.1126/science.aao4593>

A contrary view:

Hill, G.E., & Zink, R.M. 2018. Hybrid speciation in birds, with special reference to Darwin's finches. *Journal of Avian Biology* 49:e01879.

<https://onlinelibrary.wiley.com/doi/abs/10.1111/jav.01879>

Yeast hybrid species (weird and deep; I always have a hard time understanding yeast papers!):

Leducq, J.-B., Nielly-Thibault, L., Charron, G., Eberlein, C., Verta, J.-P., Samani, P., Sylvester, K., Hittinger, C.T., Bell, G., & Landry, C.R. 2016. Speciation driven by hybridization and chromosomal plasticity in a wild yeast. *Nature Microbiology* 1:15003.

<http://dx.doi.org/10.1038/nmicrobiol.2015.3>

A contrary view to Leducq et al.:

Hibbins, M.S., & Hahn, M.W. 2019. The timing and direction of introgression under the multispecies network coalescent. *Genetics* 211:1059-1073.

<https://doi.org/10.1534/genetics.118.301831>

More yeast hybrid speciation:

Marcet-Houben, M., & Gabaldón, T. 2015. Beyond the whole-genome duplication: phylogenetic evidence for an ancient interspecies hybridization in the baker's yeast lineage. *PLoS Biology* 13:e1002220. <http://dx.doi.org/10.1371/journal.pbio.1002220> (chromosome doubling due to yeast allopolyploidy -- maybe the oldest known hybrid speciation event?)

Gabaldón, T. 2020. Hybridization and the origin of new yeast lineages. FEMS Yeast Research 20. <https://doi.org/10.1093/femsyr/foaa040>

D'Angiolo, M., Chiara, M.D., Yue, J.-X., Irizar, A., Stenberg, S., Persson, K., Llored, A., Barré, B., Schacherer, J., Marangoni, R., Gilson, E., Warringer, J., & Liti, G. 2020. A yeast living fossil reveals the origin of genomic introgressions. Nature (London) 587: 420-425. <https://pubmed.ncbi.nlm.nih.gov/33177709/>

The Italian Sparrow:

Elgvin, T.O., Trier, C.N., Tørresen, O.K., Hagen, I.J., Lien, S., Nederbragt, A.J., Ravinet, M., Jensen, H., & Sætre, G.-P. 2017. The genomic mosaicism of hybrid speciation. Science Advances 3:e1602996. <https://doi.org/10.1126/sciadv.1602996>

The Columbian Woolly Mammoth was a 60:40 hybrid species, and the evidence looks good:

van der Valk, T., Pečnerová, P., Díez-del-Molino, D., Bergström, A., Oppenheimer, J., Hartmann, S., Xenikoudakis, G., Thomas, J.A., Dehasque, M., Sağlıcan, E., Fidan, F.R., Barnes, I., Liu, S., Somel, M., Heintzman, P.D., Nikolskiy, P., Shapiro, B., Skoglund, P., Hofreiter, M., Lister, A.M., Götherström, A., & Dalén, L. 2021. Million-year-old DNA sheds light on the genomic history of mammoths. Nature (London) 591:265-269. <https://doi.org/10.1038/s41586-021-03224-9>

A Chinese plant, *Ostryopsis intermedia*, in the Betulaceae. This one is cool because they have apparently found the genes that cause it to be protected from gene flow from either parent species, it's a combination from each parent that leads to the success of the hybrid!

Wang, Z., Jiang, Y., Bi, H., Lu, Z., Ma, Y., Yang, X., Chen, N., Tian, B., Liu, B., Mao, X., Ma, T., DiFazio, S.P., Hu, Q., Abbott, R.J., & Liu, J. 2020. Hybrid speciation via inheritance of alternate alleles of parental isolating genes. Molecular Plant. <https://doi.org/10.1016/j.molp.2020.11.008>

Baboons!

Rogers, J., et al. 2019. The comparative genomics and complex population history of Papio baboons. Science Advances 5:eaau6947. <https://doi.org/10.1126/sciadv.aau6947>

Root knot nematodes - important pests. Some polyploidy here, I think:

Lunt, D.H., Kumar, S., Koutsovoulos, G., & Blaxter, M.L. 2014. The complex hybrid origins of the root knot nematodes revealed through comparative genomics. PeerJ 2:e356. <https://doi.org/10.7717/peerj.356>

The Amazon molly, and asexual, ameiotic hybrid species still sperm-dependent:

Costa, G.C., & Schlupp, I. 2020. Placing the hybrid origin of the asexual Amazon molly (*Poecilia formosa*) based on historical climate data. Biological Journal of the Linnean Society 129:835-843. <https://doi.org/10.1093/biolinnean/blaa010>

Oxford ragwort:

Nevado, B., Harris, S.A., Beaumont, M.A., & Hiscock, S.J. 2020. Rapid homoploid hybrid speciation in British gardens: the origin of Oxford ragwort (*Senecio squalidus*). *Molecular Ecology* 29:4221-4233. <https://onlinelibrary.wiley.com/doi/abs/10.1111/mec.15630>

The Golden-Crowned Manakin in the Amazon (it is contested. See letter & reply):

Barrera-Guzmán, A.O., Aleixo, A., Shawkey, M.D., & Weir, J.T. 2018. Hybrid speciation leads to novel male secondary sexual ornamentation of an Amazonian bird. *Proceedings of the National Academy of Sciences of the United States of America* 115:E218-E225. <https://doi.org/10.1073/pnas.1717319115>

Rosenthal, G.G., Schumer, M., & Andolfatto, P. 2018. How the manakin got its crown: a novel trait that is unlikely to cause speciation. *Proceedings of the National Academy of Sciences of the United States of America* 115:E4144-E4145. <https://doi.org/10.1073/pnas.1804061115>

Barrera-Guzmán, A.O., Aleixo, A., Shawkey, M.D., & Weir, J.T. 2018. Reply to Rosenthal et al.: Both premating and postmating isolation likely contributed to manakin hybrid speciation. *Proceedings of the National Academy of Sciences of the United States of America* 115:E4146-E4147. <https://doi.org/10.1073/pnas.1804188115>