

REJECTION OF THE OTHER AS WELL AS REJECTION OF THE SELF, HAVE A ROLE IN EVOLUTION

We often think of self/non-self discrimination as an immunological concept. The major histocompatibility complex (MHC) is the best example: this highly polymorphic genomic region allows the immune system to distinguish "me" from "not me," triggering rejection of foreign tissues and pathogens. But evolution has gone further: in the context of reproduction, it has repeatedly invented ways to reject the self.

Take flowering plants. Many species carry self-incompatibility systems, typically governed by a single highly polymorphic locus (the S-locus), that allow the pistil to recognize and reject pollen carrying the same genetic identity as the plant itself. It is, in essence, a molecular veto against selfing. This system has been repeatedly dismantled during plant domestication: when breeders wanted to fix a desirable trait and needed inbreeding to stabilize it, self-incompatibility became an obstacle, and selection, natural or artificial, simply got rid of it. See grapes, peas (Mendel used self pollination).

Move to the nervous system, and you find yet another version of the same idea. Neurons use surface proteins, most famously the Dscam family, to avoid making synaptic connections with their own dendrites. A neuron, in other words, can recognize itself and actively refuse to connect. This self-avoidance is essential for the proper wiring of neural circuits: without it, a cell's processes would collapse onto each other rather than spreading out to sample the environment.

And now, a paper just published in PLOS Biology adds a remarkable new chapter to this story, this time in primates. Petersen et al. (1) studied olive baboons (*Papio anubis*) and found that the female vaginal tract can discriminate between sperm based on the genetic makeup of the male. After mating with males who are genetically more similar, particularly at the MHC, females showed stronger vaginal immune responses and a more pronounced drop in vaginal pH, both conditions that are hostile to sperm survival. The effect is subtler than outright rejection, but the logic is the same: the female reproductive tract appears to create a less favorable environment for sperm that are, genetically speaking, too close to home.

1. [10.1371/journal.pbio.3003699](https://doi.org/10.1371/journal.pbio.3003699)

What about *Homo sapiens*? If you want to dive deeper, check out these papers:

Wedekind et al. 1995	10.1098/rspb.1995.0087
Fitzpatrick et al. 2020	10.1098/rspb.2020.0805
Colaco et al. 2015	10.1186/1477-7827-4-S1-S10

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