Gut microbiota and phytoestrogen-associated infertility in southern white rhinoceros

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Researchers from the San Diego Zoo Global Institute for Conservation Research have found the gut microbiota of the captive southern white rhinoceros may partially explain its infertility. They compared the gut microbiome of two rhinoceros species to investigate whether the gut microbes metabolize dietary phytoestrogens, which appear to play a role in infertility.

The researchers show that reproductive outcomes may be driven by the gut microbiota's transformation of dietary phytoestrogens, which differ between the two species; the study also demonstrates species differences in estrogen receptor sensitivity to phytoestrogen metabolites produced. The research is published April 9 in *mBio*, an open access journal of the American Society for Microbiology.

SWR poaching has reached record levels, and the global captive SWR population is not currently self-sustaining due to the reproductive failure of captive-born females. Using a combined approach of parallel sequencing, mass spectrometry, and estrogen receptor activation assays, the team of researchers provided insight into the relationship between microbially mediated phytoestrogen metabolism and fertility that is novel for any vertebrate species.

With this information, they aim to develop strategies to improve captive reproduction in the hope of alleviating their threat of extinction of southern white rhinoceroses.