

# RHINO SIGNATURE PROJECT UPDATES

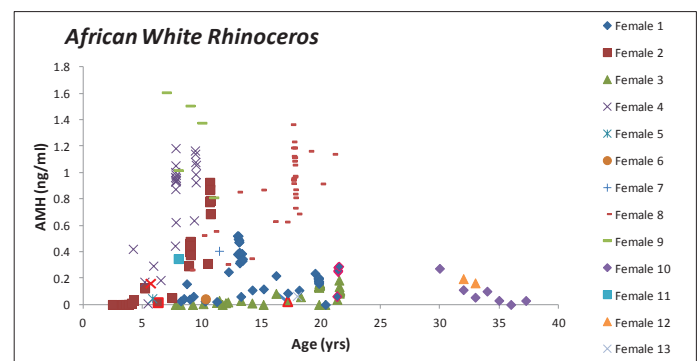
## One Small Step in the Effort to Save the Species, One Giant Leap for the Breeding Program

Although the Cincinnati Zoo & Botanical Garden's role in Sumatran rhino conservation changed significantly last fall when the last Sumatran rhino in the Western Hemisphere "Harapan" was transferred from the Zoo to the Sumatran Rhino Sanctuary (SRS) in Indonesia, the zoo continues to have a profound impact on the species' fight for survival. In May of this year, news heralded from the island of Sumatra brought hope to conservationists, and CREW was integral to that headline news. A female rhino named Ratu delivered her second healthy calf at the SRS. The precious newborn female is desperately needed for the breeding program. She is the second calf sired by Andalas who was the first Sumatran rhino bred and born in captivity in 112 years and the product of CREW's groundbreaking research that unraveled the mysteries of Sumatran rhino reproduction in 2001. Andalas moved from the Los Angeles Zoo to Sumatra in 2007, and that move has paid off in the form of the first and now second Sumatran rhino calves ever bred and born in captivity in S.E. Asia. It was not by chance that the Sanctuary succeeded. Not only did Andalas prove to be a very fertile male rhino, but CREW's scientific protocol for breeding this species has been adopted by Indonesian colleagues who received hands-on training by CREW scientists. Today, 40% of the Sumatran rhinos in the small captive breeding program owe their existence to CREW's scientific breakthroughs and the Cincinnati Zoo's Sumatran rhino lineage, but the sex of the resulting offspring was up to fate, and finally, if only briefly, fate smiled down upon the species.



## A Novel Way to Determine Reproductive Potential of Rhinos?

Previous studies have shown that serum concentrations of a protein named anti-Müllerian hormone (AMH), produced only by the testes and ovaries, correlates well with reproductive potential in a wide range of species. Serum AMH concentrations provide greater clarity of reproductive age versus calendar age in both women and mares and may have promise as a valuable asset to reproductive management of captive rhino populations. Physiologic values can help to identify individuals with the highest potential for reproductive success from assisted techniques, including exogenous hormone administration and artificial insemination, and help determine where limited resources are best spent. With this in mind, CREW scientists recently concluded a study of AMH in rhinos. We validated an assay for determination of AMH in African (white and black) and Asian (Indian and Sumatran) rhinos and measured serum AMH concentrations over time (different ages), between genders, throughout different reproductive states (estrous cycle, pregnancy) and among the four rhino species. Results from this study confirm AMH concentrations decline as a function of age in female rhinos of all species. Within each species, males produce higher AMH concentrations compared to their female counterparts. Additionally, we observed significant differences in the concentrations of AMH produced by males, with Indian rhino bulls secreting 5 to 75 times higher AMH compared to similarly aged bulls from the other three rhino species. It appears AMH may serve as a relevant biomarker of reproductive potential in rhinos. Additional analysis is currently underway to explore some of the underlying differences among species and between genders. *(This research was supported by a grant from the Institute of Museum and Library Services)*



Serum AMH concentrations in female African white rhinos