

## Help Anemic Cats

**An effective experimental treatment may offer hope for felines with non-regenerative anemia.**

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**Blood Counts** Signs of anemia include lethargy, inactivity, decreased appetite and pallor (pale gums). Diagnosis is obtained from a complete blood count to determine the percentage of blood comprised of red blood cells. A reticulocyte (immature red blood cell) count should be performed at the same time to help further characterize the anemia. A small number of reticulocytes are usually present in the circulation. Though immature, reticulocytes can still carry oxygen. When they become fully mature, the bone marrow releases them into the general circulation. When anemic cats have increased numbers of reticulocytes in their circulation, this indicates that the bone marrow recognizes the circulation's red blood cell deficiency and is trying to replenish the blood stream with new ones. A low count of reticulocytes in the bloodstream indicates that the marrow cannot effectively replenish the bloodstream and an investigation is necessary to determine the cause of this non-regenerative anemia.

**Direction of Hope** In 1989, researchers successfully used genetically engineered cell lines and recombinant DNA technology (DNA prepared through laboratory manipulation in which genes from one species or organism are transplanted or spliced to another organism) to synthesize recombinant human erythropoietin (rhEPO) for humans with non-regenerative anemia. This product has also been used successfully in dogs and cats with anemia caused by EPO deficiency. Unfortunately, the immune systems of 25 to 33 percent of the cats recognize the genetically engineered rhEPO as being of human origin, and produce antibodies that attack and neutralize it. To make matters worse, these antibodies can "cross-recognize" and attack any small amount of the cat's own EPO that is still being produced. This causes the red blood cell count to plunge rapidly to life-threatening levels, for which a blood transfusion is the only treatment. One solution would be to administer a genetically engineered EPO of feline origin. To date, no major pharmaceutical companies have invested the sizeable capital needed to develop and market this drug. Compared to the human market, the market for such a product is small.

James MacLeod, Ph.D., a veterinary pathologist and associate professor of molecular genetics at Cornell University in Ithaca, N.Y., devoted himself to this endeavor soon after rhEPO was developed.