Erythrocyte Pyruvate Kinase Deficiency (PK Deficiency) Testing and Breeding

Erythrocyte Pyruvate Kinase Deficiency (PK Deficiency) is an inherited hemolytic anemia caused by insufficient activity of this regulatory enzyme which results in instability and loss of red blood cells. The anemia is intermittent, the age of onset is variable, and clinical signs are also variable. Symptoms of this anemia can include severe lethargy, weakness, weight loss, jaundice, and abdominal enlargement. This condition is inherited as an autosomal recessive.

1. Recommendations for Testing

The DNA PK Deficiency test should be done before the cat (male or female) is used in a breeding program.

2. Recommendations for Breeding

2.1 Test result NORMAL: N/N, no copies of the PK Deficiency mutation

Cats with a normal test result may be used in breeding from a PK Deficiency point of view. Kittens out of two cats (mother and father) with normal test result will always have a normal test result and do not have to be tested.

2.2 Test result CARRIER: N/k, one copy of the PK DEFICIENCY mutation

Cats with one copy of the PK Deficiency mutation will be healthy. They may be used in a breeding program but must only be mated with a cat having a normal test result. All the resulting kittens used for breeding must be tested, because statistically half of them will be carriers.

2.3 Test result AFFECTED: k/k, two copies of the PK Deficiency mutation

Affected cats with two copies of the PK Deficiency mutation will develop clinical signs of PK Deficiency. It is not recommended to use a cat with two copies of the PK Deficiency mutation as far as breeding is concerned.

Conclusion:

PK Deficiency can easily be defeated in our breed within one or two generations. However, we need to find a good compromise between the fight against PK Deficiency and the conservation of genetic diversity. If we can choose between two kittens, we should always keep as a breeder that one which does not carry the PK Deficiency mutation. But we should not give up the gene pool of all Bengals that currently are carrier of the PK Deficiency mutation.