The Lutino

The lutino coloration is called a "p mutation" because of an integral membrane p protein. The p protein appears to be a transporter, however for exactly what remains unknown. Because high levels of tyrosine induce pigmentation in the eye's melanocytes it would suggest this p protein plays a role in tyrosine transport.[1] It does not only affect the eye but coat color as well. It is recessive (so P is normal and p is the mutation) and a rabbit that is pp will have the pink eyes and also the fur color changes.

In a sense, this mutation causes an effect similar to the non-extension gene, just to a less degree and with the addition of the pink eyes. This is due to the decreased production of eumelanin with yet little effect on pheomelanin.[2] While there could be different variants, the basic orange colored lutinos are genetically A_B_C_D_eepp. Cream colored lutinos (called "Shadow") and are genetically A_B_C_D_E_pp. The p mutation can create other colors with different base genotypes.

This is not a "new" mutation. It is the one of the more common forms of albinism. The official name is type II oculocutaneous albinism. It is a Tyrosinase positive form. In mice, the protein product of this p locus' first intraluminal loop was studied back in 1994.[1] In mice, William Castle wrote about it in 1909.[3] So as one can see, this has been a long studied mutation. However, we still have a lot to learn about exactly what this transport protein does and the exact mechanism by which it works.

1. Rosemblat, Susana. et al. Identification of a melanosomal membrane protein encoded by the pink-eyed dilution (type II oculocutaneous albinism) gene. *PNAS.* December 1994; 91: 12071-12075.
2. Russell, ES. *Genetics* 34: 146 March 1949
3. Castle, WE. The Peculiar Inheritance of Pink Eyes Among Colored Mice. *Science*. 3 September 1909; 30(766): 313-314.