

Nov. 2016 Newsletter.

The Pigeon Genetics Newsletter

News, Views, and Comments.

Editor: R J Rodgers, Nova Scotia, Canada

Co-Editor: Jith Peter, Palakkad, India

This Month : "THE EYES HAVE IT "

We know the strong importance that the Pigeon eye plays in many Racing Pigeon Lofts ., but the colour of the eyes in all pigeons has only recently been receiving more attention.

Some Show and Flying Breeds must have a specific eye colour . Often certain Coloured Birds are expected to have a specific eye colour such as the Highflyers/ Tipplers that are Pearl eyed. Many Indian Breeds are Red/orange eyed , while Arabian Trumpeters have very Dark eyes. Some pure white Breeds have Bull eyes while others must have pearl or orange eyes .



Wikipedia Photo.

The Iris of the eyes of pigeons may range from the "wild type" - Orange , through many shades of yellow to red , pearl to white, browns to black. There is pink and even "green"! We hope you will enjoy this Issue and that it will shed some new light on this subject for all of you .

Two Intense babies with long down hair. Note that the colour of the eye ball in the first one is light as it would normally be in Silver (dilute blue). Shoibal noticed that any such young , while they appeared to be dilute blue series of one pattern or another in that the eye ball appears lighter , were in fact intense brown series. This holds true to the fact that the brown/Chocolate series always produces a different eye colour tone than the other Intense series Ash/Red and blue /black. As an adult these eyes will always be similar to false pearl colour .



(Shoibal

Sabbir)

The Eye colour difference led Shoibal to consider that brown was in some way more closely akin to "dilution" due to the similarities in the newly hatched chick eye colour. Below is an excerpt from a recent letter that Hein Van Grouw sent to Axel Sell and copied to us here at The Genetics Newsletter "News , Views, and Comments ". I hesitate to print it in case some of the terms serve to further confuse readers , but feel that it is relevant to the above topic : The comments were edited .

I find it very useful to compare mutations in pigeons with other (bird)species. This, called comparative genetics, is something that is common in 'Mammal genetics' but hardly done in 'Avian genetics' and I wonder why , as I said, I find it very helpful to understand things.

That's how I also found out that dilution in pigeons does not fit the 'scientific' definition of dilution. As said, dilution in pigeons is a qualitative reduction of melanin, just as Brown is. Qualitative reduction is in fact incomplete oxidation of the melanin during the melanin synthesis resulting in brownish eumelanin granules instead of black. Compare a Diluted black (Dun) pigeon with a Spread Brown; most breeders cannot tell the difference between the two colours. Hein Van Grouw.

(I want to add here that while there is the similarity between Brown and dilution whereby both are the result of qualitative melanin reduction. The "dilution phase" in pigeons affects the Intense phase of Brown as it does Black creating "khaki and Dun" respectively) . (Bob.R.)

~~~~~

**Below you will see an orange eyed Indian fantail that has a grey pupil. This bird is nearly blind , still able to feed and get around the loft , but will eventually be completely blind. This is not to be confused with a trait associated with Stipper/Almonds in particular known as Bladder Eye whereby there is an excess of fluid build-up in the area known as the chamber of the aqueous humor. It can cause a distorted shape of the pupil and the combined effect causes the bird to have difficulty feeding and moving around. A similar effect to this gray pupil, can sometimes be seen when the lighting is such that a reflection of light can be seen.**



**There are a number of traits that "diminish" the amount of pigment or remove it altogether. We know them as pink-eyed dilute ., Albino ., Homer albino , and Ecrú . In most cases , the eye has virtually no colour pigment granules present in the Iris of the eye and this causes a white or even completely pink eye colour as we see the reflection of the blood vessels at the back of the eye. I bred Doves years ago that had richly coloured reddish pink (ruby) coloured eyes so that the pupil and Iris were indistinguishable . These were possible in both pure whites and very dilute feather tones .**

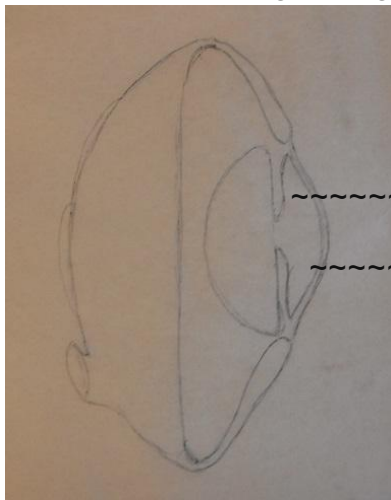
~~~~~

We often speak about "split", "cracked" , " broken "., or " odd " eyes in pigeons. Split , cracked or broken eye indicates that portions of the Iris receive some pigment while other areas do not . This is usually associated directly to the "PIED" factor which causes the same effect throughout the entire bird preventing pigment from being expressed in the skin and feathers in various amounts in an irregular design or distribution. Odd eyes indicate that

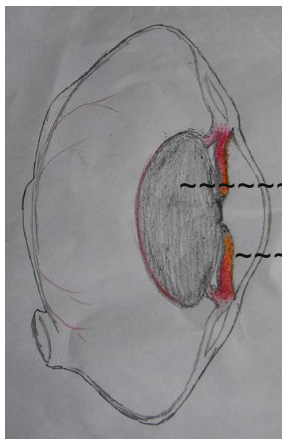
there is one eye with the Iris one colour , while the other eye is totally Bull . A bird may also have one eye Cracked while the other eye is normally coloured. This does not indicate that each parent contributed one of those eye colours . It simply means that in accordance with the normal order of Dominant and recessive genes , a certain eye colour is being expressed, but pied factor is influencing the area near one eye that is not at play near the other. The same is so if one eye is coloured and one is Bull.

The "Bull" eye is caused by the absence of pigment granules on the outer side of the iris. The iris tissue is very thin, so it is possible to see through it unless sufficient pigmentation is present , so that one can see the area behind which does not reflect any colour. Bull eye therefore is synonymous with the lack of pigment which may involve the entire bird , or segregated areas .

Albinos are generally homozygous recessive "aa" with white skin & hair and pink eye pupils. (the red of the hemoglobin of the blood vessels of the retina can be seen as there are no pigment granules to mask this effect.



~~~~~ The Iris  
~~~~~ The Chamber of Aqueous Fluid



~~~~~ Chamber of Humorous fluid  
~~~~~ Pigment and blood vessels in the Iris

The Colour of a bird's eye can be caused by both pigment and light refraction, and the amount of blood being circulated through the vessels at any given time . However we do not believe that the well being of the bird and reduced or increased blood vessels account for enhanced Iris colour alone.

The Iris - this is a muscularly operated diaphragm which controls the amount of light entering the eye. It is normally coloured and thus what we refer to as Eye Colour..

Strong colours are an accumulation of pigment and microscopic blood vessels in the iris. The more that can be seen together, the more colour, shades and depth plus light refraction, the eye shows.

The color **we** perceive is a function of the wavelength of the light stimulating the receptors of our retinas. In the visual part of the electromagnetic spectrum, we see the shortest wavelengths as "violet" and the longest as "red." Thus coloured areas that absorb all the wavelengths except the ones that are red , when they enter our visual system, they register as red. When no light is reflected we see black; when all wavelengths are reflected we see white. This accounts for the vast array of colour tones. This is like a colour wheel that we saw demonstrated during art class in grade school.

Green Iris (Racer X Satinette cross)

When a very small amount of Yellow pigment is present against the black background , we see the colour green. (Shoibal Sabbir) of Bangladesh Breeder.

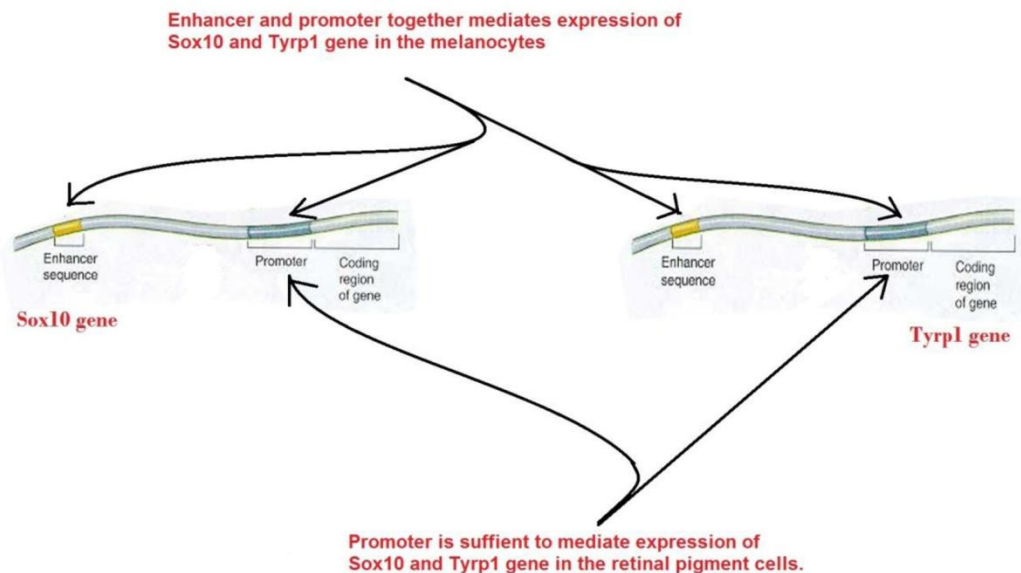


The subject of Green eyes was discussed in previous Issues of the Newsletter back as far as 1995 . Those in question were bred from a yellow eyed hen and an orange eyed Cock with 75% green eyes.. Earlier birds had yellow -green eyes. The fellow mated green eyed to pearl eyed and then got green eyed f2's. Orange eyed brother to sister from Green X orange eyed parents produced bright green eyed juveniles in the first two young. Paul's thought at the time with some reservations about the ratios ., was that the green was epistatic to other eye colours and a new mutation autosomal gene.

Blue and iridescent colors in birds are never produced by pigments as they are "structural colors." The blues are produced by minute particles in the feather that are smaller in diameter than the wavelength of red light. These particles are able to influence only shorter wavelengths, which appear blue, and are reflected in all directions. Thus structural blue colors remain the same when they are viewed at different angles in reflected light. If, however, they are viewed by transmitted light (that is, with the feather between the light source and the observer), the blue disappears revealing the true pigment. Some eye colours appear blue and these must be a pigment combination .

Excerpt from an earlier Newsletter in Dec. 2014 by Jith Peter :

We know that Browns have pink eyes in the nest and it is because of the lack of Melanin which is normally present in the inner wall of the Retina at the back of the eyes . That is due to the lack of expression of the Tyrp1 gene. But in the report published by the U of U , we saw that in the case of both Brown and recessive red , those mutations affect the Tyrp1 expression resulting in the reduction of their gene expression , causing us to wonder why doesn't recessive red show pink eyes in the nest? In fact they have normal black eyes in the nest unless they are brown based and/or have some other mutation which causes pink eyes. This chart may show a possible reason behind it ...



Melanocytes arise from the neural crest whereas Retinal Pigment Cells (cells that produce melanin in the eyes), originate from the optic cup of the developing forebrain. Pigmentation genes are controlled by different regulatory networks in the melanocytes and retinal pigment cells . In melanocytes , both the enhancer and the promoter need to express the Sox 10 and the Tyrp1 gene normally, whereas in the retinal pigment cells present in the eyes , the gene expressions are regulated by their promoters . So deletion in the Enhancer site of the Sox 10 gene does not affect the expression of the Sox10 and Tyrp1 genes in the retinal pigment cells .

We know that there are similar examples present in pigeons like recessive white , (there are other similar examples). Recessive white cuts off melanin production from the feathers , skin , beak, and toe nails , but they have black eyes in the juvenile as well as in the adult stage . The melanin production in the eyes of the recessive white bird is normal like the wild type specimen unless the bird is brown based and / or it has some other mutation which causes pink eyes . The difference in the melanin pigment level in the eyes and in feathers , skin , and beak , might be because pigmentation genes are controlled by different regulatory networks in the melanocytes than in the retinal pigment cells .

~~~~~  
**Interesting theory regarding why smooth Pigment at the tips of the wings is not diminished by most Modifiers .**

Feathers of the wingtips are subjected to more wear than those nearer the base of the wing. And feathers containing pigments are more resistant to wear than those without. That is thought to be the reason why we see dark tips on the flight feathers of many mostly white birds.

~~~~~  
Move over Barb -- this may well be the real thing !!

These birds belong to (Abu Alibasim) from Syria. The photos were viral on facebook and whats app pigeon groups about a year ago, there were arguments in the groups about them being genuine. None of us have seen them in real life yet, in order to be certain if they are in fact real.

However, Jith had received a video of them directly from the breeder and some of the photos of them posted by the breeder recently at his facebook timeline. Both evidence narrowing the chance of them being fake, which in turn enhances the chance of a new mutation, that is to be preserved for the sake of the fancy pigeon hobby. As you can see the over-grown fleshy part on their head makes them quite unique and attractive.



One of the photos above left, which was viral on facebook groups about a year ago.

This is truly an unique trait that does not look realistic. I have seen the same photos as Jith has seen and we are still not convinced that these are not simply modified in some way so as to appear to have bright red fleshy heads . The skin areas did not react to his touch in the way one would expect and seemed to be more "cloth-like" in texture.



Photos of the same birds recently posted by the breeder, at his face book timeline.



It was realized many years ago that the pigment affecting eye colour has an order of dominance and recessivity just as does the Base feather pigment and its mutations . Levi showed in his Book, diagrams indicating dominance of Orange eye over Pearl eye . However not a great deal more is known with any certainty to this day. Axel Sell reported in **this** publication back in June 1998 that he supposed that "dark eye " such as we see in the Atlas Arabian Trumpeter is a simple recessive caused by one gene only.

The following are a few of the Eye colours that you may see in your own Lofts :



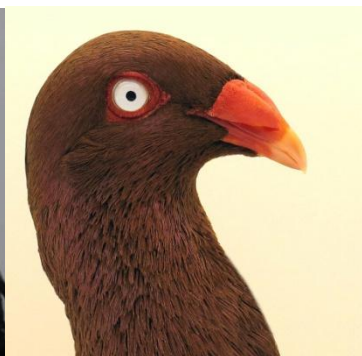
(Mick Bassett) photo

Bull eyed recessive white



(Ko Van Vleit)

Pearl eye Bald



(Wim Halesma)

Fish Eye pearl solid



(Mun-syl)

Albino pink eyed.



Unknown trait - possibly Fish - eye pearl with blood vessels showing - Bred by (Liam Burke).



The pink eye of Ecu / Extreme dilute / Lemon bred by (Khalid Ahamad)of Pakistan.



and an adult Lemon Gimpel (Tim Kvidera) .



Another look at a brown and a blue series in the nest . (Shoibal Sabbir Breeder).



Purported to be a brown with Orange eyes , this needs to be tested much more closely as it seems to be an exception that only a few maintain that they have raised. The eye colour pigment may be the expected false pearl yellow , but blood vessels reflecting red may be the reason for the Orange expression or this bird is not actually brown series at all . The bronze cast appears to be sulphur so the bird may be Dun (dilution), note horn tip beak also . (Lynn Kraal photo).



The very unusual eye Colouration of the Nasal Tufted Pigeon, From Facebook Groups several years ago , Breeder and eye description not known , Similar to Purple eye and Toad eye in Levi's Encyclopedia of Pigeon Breeds .



Dark eyed smoky solid black Arabian Trumpeter showing the typical horn tip beak and shiny solid black spread blue. (Mick Bassett photo).

That is about it for this Month of November 2016 ., We will see you all again in December , your responses determine the topics ., so let's hear from You !!